OIPE IAP68
JAN 29 2007
PATENT & TRADEMARK OFFICE

SEQUENCE LISTING

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Spies, A. Gregory
Boydston, Jeremy

<120> COMPOSITIONS AND METHODS FOR WT1
SPECIFIC IMMUNOTHERAPY

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<213> Mus musculus

<400> 308
Tyr Ser Ser Asp Asn Leu Tyr Gln Met
1 5

<210> 309
<211> 6
<212> PRT
<213> Homo sapien

<400> 309
Gly Ala Ala Gln Trp Ala
1 5

<210> 310
<211> 12
<212> PRT
<213> Homo sapien

<400> 310

```
Ala Ser Ala Tyr Gly Ser Leu Gly Gly Pro Ala Pro
 1               5                  10

      <210> 311
      <211> 15
      <212> PRT
      <213> Homo sapien

      <400> 311
Ala Phe Thr Val His Phe Ser Gly Gln Phe Thr Gly Thr Ala Gly
 1               5                  10                  15

      <210> 312
      <211> 5
      <212> PRT
      <213> Homo sapien

      <400> 312
His Ala Ala Gln Phe
 1               5

      <210> 313
      <211> 32
      <212> PRT
      <213> Homo sapien

      <400> 313
Cys His Thr Pro Thr Asp Ser Cys Thr Gly Ser Gln Ala Leu Leu Leu
 1               5                  10                  15
Arg Thr Pro Tyr Ser Ser Asp Asn Leu Tyr Gln Met Thr Ser Gln Leu
            20                  25                  30

      <210> 314
      <211> 32
      <212> PRT
      <213> Homo sapien

      <400> 314
Arg Ile His Thr His Gly Val Phe Arg Gly Ile Gln Asp Val Arg Arg
 1               5                  10                  15
Val Pro Gly Val Ala Pro Thr Leu Val Arg Ser Ala Ser Glu Thr Ser
            20                  25                  30

      <210> 315
      <211> 4
      <212> PRT
      <213> Homo sapien

      <400> 315
Arg Tyr Phe Lys
 1

      <210> 316
      <211> 14
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<212> PRT
<213> Homo sapien

<400> 316
Glu Arg Arg Phe Ser Arg Ser Asp Gln Leu Lys Arg His Gln
1 5 10

<210> 317
<211> 22
<212> PRT
<213> Homo sapien

<400> 317
Gln Arg Lys Phe Ser Arg Ser Asp His Leu Lys Thr His Thr Arg Thr
1 5 10 15
His Thr Gly Lys Thr Ser
20

<210> 318
<211> 21
<212> PRT
<213> Homo sapien

<400> 318
Cys Gln Lys Lys Phe Ala Arg Ser Asp Glu Leu Val Arg His His Asn
1 5 10 15
Met His Gln Arg Asn
20

<210> 319
<211> 449
<212> PRT
<213> Homo sapien

<400> 319
Met Gly Ser Asp Val Arg Asp Leu Asn Ala Leu Leu Pro Ala Val Pro
1 5 10 15
Ser Leu Gly Gly Gly Gly Gly Cys Ala Leu Pro Val Ser Gly Ala Ala
20 25 30
Gln Trp Ala Pro Val Leu Asp Phe Ala Pro Pro Gly Ala Ser Ala Tyr
35 40 45
Gly Ser Leu Gly Gly Pro Ala Pro Pro Pro Ala Pro Pro Pro Pro Pro
50 55 60
Pro Pro Pro Pro His Ser Phe Ile Lys Gln Glu Pro Ser Trp Gly Gly
65 70 75 80
Ala Glu Pro His Glu Glu Gln Cys Leu Ser Ala Phe Thr Val His Phe
85 90 95
Ser Gly Gln Phe Thr Gly Thr Ala Gly Ala Cys Arg Tyr Gly Pro Phe
100 105 110
Gly Pro Pro Pro Pro Ser Gln Ala Ser Ser Gly Gln Ala Arg Met Phe
115 120 125
Pro Asn Ala Pro Tyr Leu Pro Ser Cys Leu Glu Ser Gln Pro Ala Ile
130 135 140
Arg Asn Gln Gly Tyr Ser Thr Val Thr Phe Asp Gly Thr Pro Ser Tyr

```
145                 150                 155                 160
Gly His Thr Pro Ser His His Ala Ala Gln Phe Pro Asn His Ser Phe
                165                 170                 175
Lys His Glu Asp Pro Met Gly Gln Gln Gly Ser Leu Gly Glu Gln Gln
            180                 185                 190
Tyr Ser Val Pro Pro Pro Val Tyr Gly Cys His Thr Pro Thr Asp Ser
        195                 200                 205
Cys Thr Gly Ser Gln Ala Leu Leu Leu Arg Thr Pro Tyr Ser Ser Asp
    210                 215                 220
Asn Leu Tyr Gln Met Thr Ser Gln Leu Glu Cys Met Thr Trp Asn Gln
225                 230                 235                 240
Met Asn Leu Gly Ala Thr Leu Lys Gly Val Ala Ala Gly Ser Ser Ser
                245                 250                 255
Ser Val Lys Trp Thr Glu Gly Gln Ser Asn His Ser Thr Gly Tyr Glu
            260                 265                 270
Ser Asp Asn His Thr Thr Pro Ile Leu Cys Gly Ala Gln Tyr Arg Ile
        275                 280                 285
His Thr His Gly Val Phe Arg Gly Ile Gln Asp Val Arg Arg Val Pro
    290                 295                 300
Gly Val Ala Pro Thr Leu Val Arg Ser Ala Ser Glu Thr Ser Glu Lys
305                 310                 315                 320
Arg Pro Phe Met Cys Ala Tyr Pro Gly Cys Asn Lys Arg Tyr Phe Lys
                325                 330                 335
Leu Ser His Leu Gln Met His Ser Arg Lys His Thr Gly Glu Lys Pro
            340                 345                 350
Tyr Gln Cys Asp Phe Lys Asp Cys Glu Arg Arg Phe Ser Arg Ser Asp
        355                 360                 365
Gln Leu Lys Arg His Gln Arg Arg His Thr Gly Val Lys Pro Phe Gln
    370                 375                 380
Cys Lys Thr Cys Gln Arg Lys Phe Ser Arg Ser Asp His Leu Lys Thr
385                 390                 395                 400
His Thr Arg Thr His Thr Gly Lys Thr Ser Glu Lys Pro Phe Ser Cys
                405                 410                 415
Arg Trp Pro Ser Cys Gln Lys Lys Phe Ala Arg Ser Asp Glu Leu Val
            420                 425                 430
Arg His His Asn Met His Gln Arg Asn Met Thr Lys Leu Gln Leu Ala
        435                 440                 445
Leu
```

<210> 320
<211> 449
<212> PRT
<213> Mus musculus

<400> 320

```
Met Gly Ser Asp Val Arg Asp Leu Asn Ala Leu Leu Pro Ala Val Ser
 1               5                  10                  15
Ser Leu Gly Gly Gly Gly Gly Cys Gly Leu Pro Val Ser Gly Ala Ala
            20                  25                  30
Gln Trp Ala Pro Val Leu Asp Phe Ala Pro Pro Gly Ala Ser Ala Tyr
        35                  40                  45
Gly Ser Leu Gly Gly Pro Ala Pro Pro Pro Ala Pro Pro Pro Pro Pro
    50                  55                  60
```

```
Pro Pro Pro Pro His Ser Phe Ile Lys Gln Glu Pro Ser Trp Gly Gly
65                  70                  75                  80
Ala Glu Pro His Glu Glu Gln Cys Leu Ser Ala Phe Thr Leu His Phe
                85                  90                  95
Ser Gly Gln Phe Thr Gly Thr Ala Gly Ala Cys Arg Tyr Gly Pro Phe
            100                 105                 110
Gly Pro Pro Pro Pro Ser Gln Ala Ser Ser Gly Gln Ala Arg Met Phe
        115                 120                 125
Pro Asn Ala Pro Tyr Leu Pro Ser Cys Leu Glu Ser Gln Pro Thr Ile
    130                 135                 140
Arg Asn Gln Gly Tyr Ser Thr Val Thr Phe Asp Gly Ala Pro Ser Tyr
145                 150                 155                 160
Gly His Thr Pro Ser His His Ala Ala Gln Phe Pro Asn His Ser Phe
                165                 170                 175
Lys His Glu Asp Pro Met Gly Gln Gln Gly Ser Leu Gly Glu Gln Gln
            180                 185                 190
Tyr Ser Val Pro Pro Pro Val Tyr Gly Cys His Thr Pro Thr Asp Ser
        195                 200                 205
Cys Thr Gly Ser Gln Ala Leu Leu Leu Arg Thr Pro Tyr Ser Ser Asp
    210                 215                 220
Asn Leu Tyr Gln Met Thr Ser Gln Leu Glu Cys Met Thr Trp Asn Gln
225                 230                 235                 240
Met Asn Leu Gly Ala Thr Leu Lys Gly Met Ala Ala Gly Ser Ser Ser
                245                 250                 255
Ser Val Lys Trp Thr Glu Gly Gln Ser Asn His Gly Ile Gly Tyr Glu
            260                 265                 270
Ser Asp Asn His Thr Ala Pro Ile Leu Cys Gly Ala Gln Tyr Arg Ile
        275                 280                 285
His Thr His Gly Val Phe Arg Gly Ile Gln Asp Val Arg Arg Val Ser
    290                 295                 300
Gly Val Ala Pro Thr Leu Val Arg Ser Ala Ser Glu Thr Ser Glu Lys
305                 310                 315                 320
Arg Pro Phe Met Cys Ala Tyr Pro Gly Cys Asn Lys Arg Tyr Phe Lys
                325                 330                 335
Leu Ser His Leu Gln Met His Ser Arg Lys His Thr Gly Glu Lys Pro
            340                 345                 350
Tyr Gln Cys Asp Phe Lys Asp Cys Glu Arg Arg Phe Ser Arg Ser Asp
        355                 360                 365
Gln Leu Lys Arg His Gln Arg Arg His Thr Gly Val Lys Pro Phe Gln
    370                 375                 380
Cys Lys Thr Cys Gln Arg Lys Phe Ser Arg Ser Asp His Leu Lys Thr
385                 390                 395                 400
His Thr Arg Thr His Thr Gly Lys Thr Ser Glu Lys Pro Phe Ser Cys
                405                 410                 415
Arg Trp His Ser Cys Gln Lys Lys Phe Ala Arg Ser Asp Glu Leu Val
            420                 425                 430
Arg His His Asn Met His Gln Arg Asn Met Thr Lys Leu His Val Ala
        435                 440                 445
Leu
```

<210> 321
<211> 9
<212> PRT

<213> Homo sapien and Mus musculus

<400> 321
Pro Ser Gln Ala Ser Ser Gly Gln Ala
1 5

<210> 322
<211> 9
<212> PRT
<213> Homo sapien and Mus musculus

<400> 322
Ser Ser Gly Gln Ala Arg Met Phe Pro
1 5

<210> 323
<211> 9
<212> PRT
<213> Homo sapien and Mus musculus

<400> 323
Gln Ala Arg Met Phe Pro Asn Ala Pro
1 5

<210> 324
<211> 9
<212> PRT
<213> Homo sapien and Mus musculus

<400> 324
Met Phe Pro Asn Ala Pro Tyr Leu Pro
1 5

<210> 325
<211> 9
<212> PRT
<213> Homo sapien and Mus musculus

<400> 325
Pro Asn Ala Pro Tyr Leu Pro Ser Cys
1 5

<210> 326
<211> 9
<212> PRT
<213> Homo sapien and Mus musculus

<400> 326
Ala Pro Tyr Leu Pro Ser Cys Leu Glu
1 5

<210> 327
<211> 1029

<212> DNA
<213> Homo sapiens

<400> 327
atgcagcatc accaccatca ccacatgagc gataaaatta ttcacctgac tgacgacagt 60
tttgacacgg atgtactcaa agcggacggg gcgatcctcg tcgatttctg ggcagagtgg 120
tgcggtccgt gcaaaatgat cgccccgatt ctggatgaaa tcgctgacga atatcagggc 180
aaactgaccg ttgcaaaact gaacatcgat caaaaccctg gcactgcgcc gaaatatggc 240
atccgtggta tcccgactct gctgctgttc aaaaacggtg aagtggcggc aaccaaagtg 300
ggtgcactgt ctaaaggtca gttgaaagag ttcctcgacg ctaacctggc cggttctggt 360
tctggccata tgcagcatca ccaccatcac cacgtgtcta tcgaaggtcg tgctagctct 420
ggtggcagcg gtctggttcc gcgtggtagc tctggttcgg gggacgacga cgacaaatct 480
agtaggcaca gcacagggta cgagagcgat aaccacacaa cgcccatcct ctgcggagcc 540
caatacagaa tacacacgca cggtgtcttc agaggcattc aggatgtgcg acgtgtgcct 600
ggagtagccc cgactcttgt acggtcggca tctgagacca gtgagaaacg ccccttcatg 660
tgtgcttacc caggctgcaa taagagatat tttaagctgt cccacttaca gatgcacagc 720
aggaagcaca ctggtgagaa accataccag tgtgacttca aggactgtga acgaaggttt 780
tttcgttcag accagctcaa aagacaccaa aggagacata caggtgtgaa accattccag 840
tgtaaaactt gtcagcgaaa gttctcccgg tccgaccacc tgaagaccca caccaggact 900
catacaggtg aaaagccctt cagctgtcgg tggccaagtt gtcagaaaaa gtttgcccgg 960
tcagatgaat tagtccgcca tcacaacatg catcagagaa acatgaccaa actccagctg 1020
gcgctttga 1029

<210> 328
<211> 1233
<212> DNA
<213> Homo sapiens

<400> 328
atgcagcatc accaccatca ccacatgagc gataaaatta ttcacctgac tgacgacagt 60
tttgacacgg atgtactcaa agcggacggg gcgatcctcg tcgatttctg ggcagagtgg 120
tgcggtccgt gcaaaatgat cgccccgatt ctggatgaaa tcgctgacga atatcagggc 180
aaactgaccg ttgcaaaact gaacatcgat caaaaccctg gcactgcgcc gaaatatggc 240
atccgtggta tcccgactct gctgctgttc aaaaacggtg aagtggcggc aaccaaagtg 300
ggtgcactgt ctaaaggtca gttgaaagag ttcctcgacg ctaacctggc cggttctggt 360
tctggccata tgcagcatca ccaccatcac cacgtgtcta tcgaaggtcg tgctagctct 420
ggtggcagcg gtctggttcc gcgtggtagc tctggttcgg gggacgacga cgacaaatct 480
agtaggggct ccgacgttcg tgacctgaac gcactgctgc cggcagttcc gtccctgggt 540
ggtggtggtg gttgcgcact gccggttagc ggtgcagcac agtgggctcc ggttctggac 600
ttcgcaccgc cgggtgcatc cgcatacggt tccctgggtg gtccggcacc gccgccggca 660
ccgccgccgc cgccgccgcc gccgccgcac tccttcatca aacaggaacc gagctggggt 720
ggtgcagaac cgcacgaaga acagtgcctg agcgcattca ccgttcactt ctccggccag 780
ttcactggca cagccggagc ctgtcgctac gggcccttcg gtcctcctcc gcccagccag 840
gcgtcatccg gccaggccag gatgtttcct aacgcgccct acctgcccag ctgcctcgag 900
agccagcccg ctattcgcaa tcagggttac agcacggtca ccttcgacgg gacgcccagc 960
tacggtcaca cgccctcgca ccatgcggcg cagttcccca accactcatt caagcatgag 1020
gatcccatgg gccagcaggg ctcgctgggt gagcagcagt actcggtgcc gccccggtc 1080
tatggctgcc acacccccac cgacagctgc accggcagcc aggctttgct gctgaggacg 1140
ccctacagca gtgacaattt ataccaaatg acatcccagc ttgaatgcat gacctggaat 1200
cagatgaact taggagccac cttaaagggc tga 1233

<210> 329
<211> 1776
<212> DNA

<213> Homo sapiens

<400> 329
atgcagcatc accaccatca ccacatgagc gataaaatta ttcacctgac tgacgacagt 60
tttgacacgg atgtactcaa agcggacggg gcgatcctcg tcgatttctg ggcagagtgg 120
tgcggtccgt gcaaaatgat cgccccgatt ctggatgaaa tcgctgacga atatcagggc 180
aaactgaccg ttgcaaaact gaacatcgat caaaaccctg gcactgcgcc gaaatatggc 240
atccgtggta tcccgactct gctgctgttc aaaaacggtg aagtggcggc aaccaaagtg 300
ggtgcactgt ctaaaggtca gttgaaagag ttcctcgacg ctaacctggc cggttctggt 360
tctggccata tgcagcatca ccaccatcac cacgtgtcta tcgaaggtcg tgctagctct 420
ggtggcagcg gtctggttcc gcgtggtagc tctggttcgg gggacgacga cgacaaatct 480
agtaggatgg gctccgacgt tcgtgacctg aacgcactgc tgccggcagt tccgtccctg 540
ggtggtggtg gtggttgcgc actgccggtt agcggtgcag cacagtgggc tccggttctg 600
gacttcgcac cgccgggtgc atccgcatac ggttccctgg gtggtccggc accgccgccg 660
gcaccgccgc cgccgccgcc gccgccgccg cactccttca tcaaacagga accgagctgg 720
ggtggtgcag aaccgcacga agaacagtgc ctgagcgcat tcaccgttca cttctccggc 780
cagttcactg gcacagccgg agcctgtcgc tacgggccct tcggtcctcc tccgcccagc 840
caggcgtcat ccggccaggc caggatgttt cctaacgcgc cctacctgcc cagctgcctc 900
gagagccagc ccgctattcg caatcagggt tacagcacgg tcaccttcga cgggacgccc 960
agctacggtc acacgccctc gcaccatgcg gcgcagttcc ccaaccactc attcaagcat 1020
gaggatccca tgggccagca gggctcgctg ggtgagcagc agtactcggt gccgcccccg 1080
gtctatggct gccacacccc caccgacagc tgcaccggca gccaggcttt gctgctgagg 1140
acgccctaca gcagtgacaa tttataccaa atgacatccc agcttgaatg catgacctgg 1200
aatcagatga acttaggagc caccttaaag ggccacagca cagggtacga gagcgataac 1260
cacacaacgc ccatcctctg cggagcccaa tacagaatac acacgcacgg tgtcttcaga 1320
ggcattcagg atgtgcgacg tgtgcctgga gtagccccga ctcttgtacg gtcggcatct 1380
gagaccagtg agaaacgccc cttcatgtgt gcttacccag gctgcaataa gagatatttt 1440
aagctgtccc acttacagat gcacagcagg aagcacactg gtgagaaacc ataccagtgt 1500
gacttcaagg actgtgaacg aaggtttttt cgttcagacc agctcaaaag acaccaaagg 1560
agacatacag gtgtgaaacc attccagtgt aaaacttgtc agcgaaagtt ctcccggtcc 1620
gaccacctga agacccacac caggactcat acaggtgaaa agcccttcag ctgtcggtgg 1680
ccaagttgtc agaaaaagtt tgcccggtca gatgaattag tccgccatca caacatgcat 1740
cagagaaaca tgaccaaact ccagctggcg ctttga 1776

<210> 330
<211> 771
<212> DNA
<213> Homo sapiens

<400> 330
atgcagcatc accaccatca ccacggctcc gacgttcgtg acctgaacgc actgctgccg 60
gcagttccgt ccctgggtgg tggtggtggt tgcgcactgc cggttagcgg tgcagcacag 120
tgggctccgg ttctggactt cgcaccgccg ggtgcatccg catacggttc cctgggtggt 180
ccggcaccgc cgccggcacc gccgccgccg ccgccgccgc cgccgcactc cttcatcaaa 240
caggaaccga gctggggtgg tgcagaaccg cacgaagaac agtgcctgag cgcattcacc 300
gttcacttct ccggccagtt cactggcaca gccggagcct gtcgctacgg gcccttcggt 360
cctcctccgc ccagccaggc gtcatccggc caggccagga tgtttcctaa cgcgccctac 420
ctgcccagct gcctcgagag ccagcccgct attcgcaatc agggttacag cacggtcacc 480
ttcgacggga cgcccagcta cggtcacacg ccctcgcacc atgcggcgca gttccccaac 540
cactcattca agcatgagga tcccatgggc cagcagggct cgctgggtga gcagcagtac 600
tcggtgccgc ccccggtcta tggctgccac acccccaccg acagctgcac cggcagccag 660
gctttgctgc tgaggacgcc ctacagcagt gacaatttat accaaatgac atcccagctt 720
gaatgcatga cctggaatca gatgaactta ggagccacct taaagggctg a 771

<210> 331
<211> 567
<212> DNA
<213> Homo sapiens

<400> 331
atgcagcatc accaccatca ccaccacagc acagggtacg agagcgataa ccacacaacg 60
cccatcctct gcggagccca atacagaata cacacgcacg gtgtcttcag aggcattcag 120
gatgtgcgac gtgtgcctgg agtagccccg actcttgtac ggtcggcatc tgagaccagt 180
gagaaacgcc ccttcatgtg tgcttaccca ggctgcaata agagatattt taagctgtcc 240
cacttacaga tgcacagcag gaagcacact ggtgagaaac cataccagtg tgacttcaag 300
gactgtgaac gaaggttttt tcgttcagac cagctcaaaa gacaccaaag gagacataca 360
ggtgtgaaac cattccagtg taaaacttgt cagcgaaagt tctcccggtc cgaccacctg 420
aagacccaca ccaggactca tacaggtgaa aagcccttca gctgtcggtg gccaagttgt 480
cagaaaaagt ttgcccggtc agatgaatta gtccgccatc acaacatgca tcagagaaac 540
atgaccaaac tccagctggc gctttga 567

<210> 332
<211> 342
<212> PRT
<213> Homo sapiens

<400> 332
Met Gln His His His His His His Met Ser Asp Lys Ile Ile His Leu
1 5 10 15
Thr Asp Asp Ser Phe Asp Thr Asp Val Leu Lys Ala Asp Gly Ala Ile
20 25 30
Leu Val Asp Phe Trp Ala Glu Trp Cys Gly Pro Cys Lys Met Ile Ala
35 40 45
Pro Ile Leu Asp Glu Ile Ala Asp Glu Tyr Gln Gly Lys Leu Thr Val
50 55 60
Ala Lys Leu Asn Ile Asp Gln Asn Pro Gly Thr Ala Pro Lys Tyr Gly
65 70 75 80
Ile Arg Gly Ile Pro Thr Leu Leu Leu Phe Lys Asn Gly Glu Val Ala
85 90 95
Ala Thr Lys Val Gly Ala Leu Ser Lys Gly Gln Leu Lys Glu Phe Leu
100 105 110
Asp Ala Asn Leu Ala Gly Ser Gly Ser Gly His Met Gln His His His
115 120 125
His His His Val Ser Ile Glu Gly Arg Ala Ser Ser Gly Gly Ser Gly
130 135 140
Leu Val Pro Arg Gly Ser Ser Gly Ser Gly Asp Asp Asp Asp Lys Ser
145 150 155 160
Ser Arg His Ser Thr Gly Tyr Glu Ser Asp Asn His Thr Thr Pro Ile
165 170 175
Leu Cys Gly Ala Gln Tyr Arg Ile His Thr His Gly Val Phe Arg Gly
180 185 190
Ile Gln Asp Val Arg Arg Val Pro Gly Val Ala Pro Thr Leu Val Arg
195 200 205
Ser Ala Ser Glu Thr Ser Glu Lys Arg Pro Phe Met Cys Ala Tyr Pro
210 215 220

```
Gly Cys Asn Lys Arg Tyr Phe Lys Leu Ser His Leu Gln Met His Ser
225                 230                 235                 240
Arg Lys His Thr Gly Glu Lys Pro Tyr Gln Cys Asp Phe Lys Asp Cys
                245                 250                 255
Glu Arg Arg Phe Phe Arg Ser Asp Gln Leu Lys Arg His Gln Arg Arg
            260                 265                 270
His Thr Gly Val Lys Pro Phe Gln Cys Lys Thr Cys Gln Arg Lys Phe
        275                 280                 285
Ser Arg Ser Asp His Leu Lys Thr His Thr Arg Thr His Thr Gly Glu
    290                 295                 300
Lys Pro Phe Ser Cys Arg Trp Pro Ser Cys Gln Lys Lys Phe Ala Arg
305                 310                 315                 320
Ser Asp Glu Leu Val Arg His His Asn Met His Gln Arg Asn Met Thr
                325                 330                 335
Lys Leu Gln Leu Ala Leu
            340
```

<210> 333
<211> 410
<212> PRT
<213> Homo sapiens

<400> 333

```
Met Gln His His His His His His Met Ser Asp Lys Ile Ile His Leu
                  5                  10                  15
Thr Asp Asp Ser Phe Asp Thr Asp Val Leu Lys Ala Asp Gly Ala Ile
             20                  25                  30
Leu Val Asp Phe Trp Ala Glu Trp Cys Gly Pro Cys Lys Met Ile Ala
         35                  40                  45
Pro Ile Leu Asp Glu Ile Ala Asp Glu Tyr Gln Gly Lys Leu Thr Val
     50                  55                  60
Ala Lys Leu Asn Ile Asp Gln Asn Pro Gly Thr Ala Pro Lys Tyr Gly
 65                  70                  75                  80
Ile Arg Gly Ile Pro Thr Leu Leu Leu Phe Lys Asn Gly Glu Val Ala
                 85                  90                  95
Ala Thr Lys Val Gly Ala Leu Ser Lys Gly Gln Leu Lys Glu Phe Leu
            100                 105                 110
Asp Ala Asn Leu Ala Gly Ser Gly Ser Gly His Met Gln His His His
        115                 120                 125
His His His Val Ser Ile Glu Gly Arg Ala Ser Ser Gly Gly Ser Gly
    130                 135                 140
Leu Val Pro Arg Gly Ser Ser Gly Ser Gly Asp Asp Asp Asp Lys Ser
145                 150                 155                 160
Ser Arg Gly Ser Asp Val Arg Asp Leu Asn Ala Leu Leu Pro Ala Val
                165                 170                 175
Pro Ser Leu Gly Gly Gly Gly Gly Cys Ala Leu Pro Val Ser Gly Ala
            180                 185                 190
Ala Gln Trp Ala Pro Val Leu Asp Phe Ala Pro Pro Gly Ala Ser Ala
        195                 200                 205
Tyr Gly Ser Leu Gly Gly Pro Ala Pro Pro Pro Ala Pro Pro Pro Pro
    210                 215                 220
Pro Pro Pro Pro Pro His Ser Phe Ile Lys Gln Glu Pro Ser Trp Gly
```

```
225                 230                 235                 240
Gly Ala Glu Pro His Glu Glu Gln Cys Leu Ser Ala Phe Thr Val His
                245                 250                 255
Phe Ser Gly Gln Phe Thr Gly Thr Ala Gly Ala Cys Arg Tyr Gly Pro
            260                 265                 270
Phe Gly Pro Pro Pro Pro Ser Gln Ala Ser Ser Gly Gln Ala Arg Met
        275                 280                 285
Phe Pro Asn Ala Pro Tyr Leu Pro Ser Cys Leu Glu Ser Gln Pro Ala
    290                 295                 300
Ile Arg Asn Gln Gly Tyr Ser Thr Val Thr Phe Asp Gly Thr Pro Ser
305                 310                 315                 320
Tyr Gly His Thr Pro Ser His His Ala Ala Gln Phe Pro Asn His Ser
                325                 330                 335
Phe Lys His Glu Asp Pro Met Gly Gln Gln Gly Ser Leu Gly Glu Gln
            340                 345                 350
Gln Tyr Ser Val Pro Pro Pro Val Tyr Gly Cys His Thr Pro Thr Asp
        355                 360                 365
Ser Cys Thr Gly Ser Gln Ala Leu Leu Leu Arg Thr Pro Tyr Ser Ser
    370                 375                 380
Asp Asn Leu Tyr Gln Met Thr Ser Gln Leu Glu Cys Met Thr Trp Asn
385                 390                 395                 400
Gln Met Asn Leu Gly Ala Thr Leu Lys Gly
                405                 410
```

<210> 334
<211> 591
<212> PRT
<213> Homo sapiens

<400> 334

```
Met Gln His His His His His His Met Ser Asp Lys Ile Ile His Leu
                  5                  10                  15
Thr Asp Asp Ser Phe Asp Thr Asp Val Leu Lys Ala Asp Gly Ala Ile
             20                  25                  30
Leu Val Asp Phe Trp Ala Glu Trp Cys Gly Pro Cys Lys Met Ile Ala
         35                  40                  45
Pro Ile Leu Asp Glu Ile Ala Asp Glu Tyr Gln Gly Lys Leu Thr Val
     50                  55                  60
Ala Lys Leu Asn Ile Asp Gln Asn Pro Gly Thr Ala Pro Lys Tyr Gly
 65                  70                  75                  80
Ile Arg Gly Ile Pro Thr Leu Leu Leu Phe Lys Asn Gly Glu Val Ala
                 85                  90                  95
Ala Thr Lys Val Gly Ala Leu Ser Lys Gly Gln Leu Lys Glu Phe Leu
            100                 105                 110
Asp Ala Asn Leu Ala Gly Ser Gly Ser Gly His Met Gln His His His
        115                 120                 125
His His His Val Ser Ile Glu Gly Arg Ala Ser Ser Gly Gly Ser Gly
    130                 135                 140
Leu Val Pro Arg Gly Ser Ser Gly Ser Gly Asp Asp Asp Asp Lys Ser
145                 150                 155                 160
Ser Arg Met Gly Ser Asp Val Arg Asp Leu Asn Ala Leu Leu Pro Ala
                165                 170                 175
Val Pro Ser Leu Gly Gly Gly Gly Gly Cys Ala Leu Pro Val Ser Gly
```

```
            180                 185                 190
Ala Ala Gln Trp Ala Pro Val Leu Asp Phe Ala Pro Pro Gly Ala Ser
        195                 200                 205
Ala Tyr Gly Ser Leu Gly Gly Pro Ala Pro Pro Pro Ala Pro Pro Pro
    210                 215                 220
Pro Pro Pro Pro Pro Pro His Ser Phe Ile Lys Gln Glu Pro Ser Trp
225                 230                 235                 240
Gly Gly Ala Glu Pro His Glu Glu Gln Cys Leu Ser Ala Phe Thr Val
                245                 250                 255
His Phe Ser Gly Gln Phe Thr Gly Thr Ala Gly Ala Cys Arg Tyr Gly
            260                 265                 270
Pro Phe Gly Pro Pro Pro Pro Ser Gln Ala Ser Ser Gly Gln Ala Arg
        275                 280                 285
Met Phe Pro Asn Ala Pro Tyr Leu Pro Ser Cys Leu Glu Ser Gln Pro
    290                 295                 300
Ala Ile Arg Asn Gln Gly Tyr Ser Thr Val Thr Phe Asp Gly Thr Pro
305                 310                 315                 320
Ser Tyr Gly His Thr Pro Ser His His Ala Ala Gln Phe Pro Asn His
                325                 330                 335
Ser Phe Lys His Glu Asp Pro Met Gly Gln Gln Gly Ser Leu Gly Glu
            340                 345                 350
Gln Gln Tyr Ser Val Pro Pro Pro Val Tyr Gly Cys His Thr Pro Thr
        355                 360                 365
Asp Ser Cys Thr Gly Ser Gln Ala Leu Leu Leu Arg Thr Pro Tyr Ser
    370                 375                 380
Ser Asp Asn Leu Tyr Gln Met Thr Ser Gln Leu Glu Cys Met Thr Trp
385                 390                 395                 400
Asn Gln Met Asn Leu Gly Ala Thr Leu Lys Gly His Ser Thr Gly Tyr
                405                 410                 415
Glu Ser Asp Asn His Thr Thr Pro Ile Leu Cys Gly Ala Gln Tyr Arg
            420                 425                 430
Ile His Thr His Gly Val Phe Arg Gly Ile Gln Asp Val Arg Arg Val
        435                 440                 445
Pro Gly Val Ala Pro Thr Leu Val Arg Ser Ala Ser Glu Thr Ser Glu
    450                 455                 460
Lys Arg Pro Phe Met Cys Ala Tyr Pro Gly Cys Asn Lys Arg Tyr Phe
465                 470                 475                 480
Lys Leu Ser His Leu Gln Met His Ser Arg Lys His Thr Gly Glu Lys
                485                 490                 495
Pro Tyr Gln Cys Asp Phe Lys Asp Cys Glu Arg Arg Phe Phe Arg Ser
            500                 505                 510
Asp Gln Leu Lys Arg His Gln Arg Arg His Thr Gly Val Lys Pro Phe
        515                 520                 525
Gln Cys Lys Thr Cys Gln Arg Lys Phe Ser Arg Ser Asp His Leu Lys
    530                 535                 540
Thr His Thr Arg Thr His Thr Gly Glu Lys Pro Phe Ser Cys Arg Trp
545                 550                 555                 560
Pro Ser Cys Gln Lys Lys Phe Ala Arg Ser Asp Glu Leu Val Arg His
                565                 570                 575
His Asn Met His Gln Arg Asn Met Thr Lys Leu Gln Leu Ala Leu
            580                 585                 590
```

<210> 335
<211> 256
<212> PRT
<213> Homo sapiens

<400> 335
Met Gln His His His His His His Gly Ser Asp Val Arg Asp Leu Asn
1 5 10 15
Ala Leu Leu Pro Ala Val Pro Ser Leu Gly Gly Gly Gly Gly Cys Ala
20 25 30
Leu Pro Val Ser Gly Ala Ala Gln Trp Ala Pro Val Leu Asp Phe Ala
35 40 45
Pro Pro Gly Ala Ser Ala Tyr Gly Ser Leu Gly Gly Pro Ala Pro Pro
50 55 60
Pro Ala Pro Pro Pro Pro Pro Pro Pro Pro Pro His Ser Phe Ile Lys
65 70 75 80
Gln Glu Pro Ser Trp Gly Gly Ala Glu Pro His Glu Glu Gln Cys Leu
85 90 95
Ser Ala Phe Thr Val His Phe Ser Gly Gln Phe Thr Gly Thr Ala Gly
100 105 110
Ala Cys Arg Tyr Gly Pro Phe Gly Pro Pro Pro Pro Ser Gln Ala Ser
115 120 125
Ser Gly Gln Ala Arg Met Phe Pro Asn Ala Pro Tyr Leu Pro Ser Cys
130 135 140
Leu Glu Ser Gln Pro Ala Ile Arg Asn Gln Gly Tyr Ser Thr Val Thr
145 150 155 160
Phe Asp Gly Thr Pro Ser Tyr Gly His Thr Pro Ser His His Ala Ala
165 170 175
Gln Phe Pro Asn His Ser Phe Lys His Glu Asp Pro Met Gly Gln Gln
180 185 190
Gly Ser Leu Gly Glu Gln Gln Tyr Ser Val Pro Pro Pro Val Tyr Gly
195 200 205
Cys His Thr Pro Thr Asp Ser Cys Thr Gly Ser Gln Ala Leu Leu Leu
210 215 220
Arg Thr Pro Tyr Ser Ser Asp Asn Leu Tyr Gln Met Thr Ser Gln Leu
225 230 235 240
Glu Cys Met Thr Trp Asn Gln Met Asn Leu Gly Ala Thr Leu Lys Gly
245 250 255

<210> 336
<211> 188
<212> PRT
<213> Homo sapiens

<400> 336
Met Gln His His His His His His His Ser Thr Gly Tyr Glu Ser Asp
1 5 10 15
Asn His Thr Thr Pro Ile Leu Cys Gly Ala Gln Tyr Arg Ile His Thr
20 25 30
His Gly Val Phe Arg Gly Ile Gln Asp Val Arg Arg Val Pro Gly Val
35 40 45
Ala Pro Thr Leu Val Arg Ser Ala Ser Glu Thr Ser Glu Lys Arg Pro
50 55 60

```
Phe Met Cys Ala Tyr Pro Gly Cys Asn Lys Arg Tyr Phe Lys Leu Ser
 65                  70                  75                  80
His Leu Gln Met His Ser Arg Lys His Thr Gly Glu Lys Pro Tyr Gln
                 85                  90                  95
Cys Asp Phe Lys Asp Cys Glu Arg Arg Phe Phe Arg Ser Asp Gln Leu
            100                 105                 110
Lys Arg His Gln Arg Arg His Thr Gly Val Lys Pro Phe Gln Cys Lys
        115                 120                 125
Thr Cys Gln Arg Lys Phe Ser Arg Ser Asp His Leu Lys Thr His Thr
    130                 135                 140
Arg Thr His Thr Gly Glu Lys Pro Phe Ser Cys Arg Trp Pro Ser Cys
145                 150                 155                 160
Gln Lys Lys Phe Ala Arg Ser Asp Glu Leu Val Arg His His Asn Met
                165                 170                 175
His Gln Arg Asn Met Thr Lys Leu Gln Leu Ala Leu
            180                 185
```

<210> 337
<211> 324
<212> DNA
<213> Homo sapiens

<400> 337
atgcagcatc accaccatca ccacggttcc gacgtgcggg acctgaacgc actgctgccg 60
gcagttccat ccctgggtgg cggtggaggc tgcgcactgc cggttagcgg tgcagcacag 120
tgggctccag ttctggactt cgcaccgcct ggtgcatccg catacggttc cctgggtggt 180
ccagcacctc cgcccgcaac gccccaccg cctccaccgc ccccgcactc cttcatcaaa 240
caggaaccta gctggggtgg tgcagaaccg cacgaagaac agtgcctgag cgcattctga 300
gaattctgca gatatccatc acac 324

<210> 338
<211> 462
<212> DNA
<213> Homo sapiens

<400> 338
atgcagcatc accaccatca ccaccacgaa gaacagtgcc tgagcgcatt caccgttcac 60
ttctccggcc agttcactgg cacagccgga gcctgtcgct acgggccctt cggtcctcct 120
ccgcccagcc aggcgtcatc cggccaggcc aggatgtttc ctaacgcgcc ctacctgccc 180
agctgcctcg agagccagcc cgctattcgc aatcagggtt acagcacggt caccttcgac 240
gggacgccca gctacggtca cacgccctcg caccatgcgg cgcagttccc caaccactca 300
ttcaagcatg aggatcccat gggccagcag ggctcgctgg gtgagcagca gtactcggtg 360
ccgcccccgg tctatggctg ccacaccccc accgacagct gcaccggcag ccaggctttg 420
ctgctgagga cgccctacag cagtgacaat ttatactgat ga 462

<210> 339
<211> 405
<212> DNA
<213> Homo sapiens

<400> 339
atgcagcatc accaccatca ccaccaggct ttgctgctga ggacgcccta cagcagtgac 60
aatttatacc aaatgacatc ccagcttgaa tgcatgacct ggaatcagat gaacttagga 120
gccaccttaa agggccacag cacagggtac gagagcgata accacacaac gcccatcctc 180

tgcggagccc aatacagaat acacacgcac ggtgtcttca gaggcattca ggatgtgcga 240
cgtgtgcctg gagtagcccc gactcttgta cggtcggcat ctgagaccag tgagaaacgc 300
cccttcatgt gtgcttaccc aggctgcaat aagagatatt ttaagctgtc ccacttacag 360
atgcacagca ggaagcacac tggtgagaaa ccataccagt gatga 405

<210> 340
<211> 339
<212> DNA
<213> Homo sapiens

<400> 340
atgcagcatc accaccatca ccaccacagc aggaagcaca ctggtgagaa accataccag 60
tgtgacttca aggactgtga acgaaggttt tttcgttcag accagctcaa aagacaccaa 120
aggagacata caggtgtgaa accattccag tgtaaaactt gtcagcgaaa gttctcccgg 180
tccgaccacc tgaagaccca caccaggact catacaggtg aaaagccctt cagctgtcgg 240
tggccaagtt gtcagaaaaa gtttgcccgg tcagatgaat tagtccgcca tcacaacatg 300
catcagagaa acatgaccaa actccagctg gcgctttga 339

<210> 341
<211> 1110
<212> DNA
<213> Homo sapiens

<400> 341
atgcagcatc accaccatca ccaccactcc ttcatcaaac aggaaccgag ctggggtggt 60
gcagaaccgc acgaagaaca gtgcctgagc gcattcaccg ttcacttctc cggccagttc 120
actggcacag ccggagcctg tcgctacggg cccttcggtc ctcctccgcc cagccaggcg 180
tcatccggcc aggccaggat gtttcctaac gcgccctacc tgcccagctg cctcgagagc 240
cagcccgcta ttcgcaatca gggttacagc acggtcacct tcgacgggac gcccagctac 300
ggtcacacgc cctcgcacca tgcggcgcag ttccccaacc actcattcaa gcatgaggat 360
cccatgggcc agcagggctc gctgggtgag cagcagtact cggtgccgcc cccggtctat 420
ggctgccaca cccccaccga cagctgcacc ggcagccagg ctttgctgct gaggacgccc 480
tacagcagtg acaatttata ccaaatgaca tcccagcttg aatgcatgac ctggaatcag 540
atgaacttag gagccacctt aaagggccac agcacagggt acgagagcga taaccacaca 600
acgcccatcc tctgcggagc ccaatacaga atacacacgc acggtgtctt cagaggcatt 660
caggatgtgc gacgtgtgcc tggagtagcc ccgactcttg tacggtcggc atctgagacc 720
agtgagaaac gccccttcat gtgtgcttac ccaggctgca ataagagata ttttaagctg 780
tcccacttac agatgcacag caggaagcac actggtgaga aaccatacca gtgtgacttc 840
aaggactgtg aacgaaggtt ttttcgttca gaccagctca aaagacacca aaggagacat 900
acaggtgtga aaccattcca gtgtaaaact tgtcagcgaa agttctcccg gtccgaccac 960
ctgaagaccc acaccaggac tcatacaggt gaaaagccct tcagctgtcg gtggccaagt 1020
tgtcagaaaa agtttgcccg gtcagatgaa ttagtccgcc atcacaacat gcatcagaga 1080
aacatgacca aactccagct ggcgctttga 1110

<210> 342
<211> 99
<212> PRT
<213> Homo sapiens

<400> 342
Met Gln His His His His His His Gly Ser Asp Val Arg Asp Leu Asn

```
                  5                  10                  15
Ala Leu Leu Pro Ala Val Pro Ser Leu Gly Gly Gly Gly Gly Cys Ala
             20                  25                  30
Leu Pro Val Ser Gly Ala Ala Gln Trp Ala Pro Val Leu Asp Phe Ala
         35                  40                  45
Pro Pro Gly Ala Ser Ala Tyr Gly Ser Leu Gly Gly Pro Ala Pro Pro
     50                  55                  60
Pro Ala Pro Pro Pro Pro Pro Pro Pro Pro Pro His Ser Phe Ile Lys
 65                  70                  75                  80
Gln Glu Pro Ser Trp Gly Gly Ala Glu Pro His Glu Glu Gln Cys Leu
                 85                  90                  95
Ser Ala Phe
```

<210> 343
<211> 152
<212> PRT
<213> Homo sapiens

<400> 343

```
Met Gln His His His His His His His Glu Glu Gln Cys Leu Ser Ala
                  5                  10                  15
Phe Thr Val His Phe Ser Gly Gln Phe Thr Gly Thr Ala Gly Ala Cys
             20                  25                  30
Arg Tyr Gly Pro Phe Gly Pro Pro Pro Pro Ser Gln Ala Ser Ser Gly
         35                  40                  45
Gln Ala Arg Met Phe Pro Asn Ala Pro Tyr Leu Pro Ser Cys Leu Glu
     50                  55                  60
Ser Gln Pro Ala Ile Arg Asn Gln Gly Tyr Ser Thr Val Thr Phe Asp
 65                  70                  75                  80
Gly Thr Pro Ser Tyr Gly His Thr Pro Ser His His Ala Ala Gln Phe
                 85                  90                  95
Pro Asn His Ser Phe Lys His Glu Asp Pro Met Gly Gln Gln Gly Ser
            100                 105                 110
Leu Gly Glu Gln Gln Tyr Ser Val Pro Pro Pro Val Tyr Gly Cys His
        115                 120                 125
Thr Pro Thr Asp Ser Cys Thr Gly Ser Gln Ala Leu Leu Leu Arg Thr
    130                 135                 140
Pro Tyr Ser Ser Asp Asn Leu Tyr
145                 150
```

<210> 344
<211> 133
<212> PRT
<213> Homo sapiens

<400> 344

```
Met Gln His His His His His His Gln Ala Leu Leu Leu Arg Thr Pro
                  5                  10                  15
Tyr Ser Ser Asp Asn Leu Tyr Gln Met Thr Ser Gln Leu Glu Cys Met
             20                  25                  30
Thr Trp Asn Gln Met Asn Leu Gly Ala Thr Leu Lys Gly His Ser Thr
         35                  40                  45
```

```
Gly Tyr Glu Ser Asp Asn His Thr Thr Pro Ile Leu Cys Gly Ala Gln
     50                  55                  60
Tyr Arg Ile His Thr His Gly Val Phe Arg Gly Ile Gln Asp Val Arg
 65                  70                  75                  80
Arg Val Pro Gly Val Ala Pro Thr Leu Val Arg Ser Ala Ser Glu Thr
                 85                  90                  95
Ser Glu Lys Arg Pro Phe Met Cys Ala Tyr Pro Gly Cys Asn Lys Arg
            100                 105                 110
Tyr Phe Lys Leu Ser His Leu Gln Met His Ser Arg Lys His Thr Gly
        115                 120                 125
Glu Lys Pro Tyr Gln
    130
```

<210> 345
<211> 112
<212> PRT
<213> Homo sapiens

<400> 345

```
Met Gln His His His His His His His Ser Arg Lys His Thr Gly Glu
                 5                  10                  15
Lys Pro Tyr Gln Cys Asp Phe Lys Asp Cys Glu Arg Arg Phe Phe Arg
            20                  25                  30
Ser Asp Gln Leu Lys Arg His Gln Arg Arg His Thr Gly Val Lys Pro
        35                  40                  45
Phe Gln Cys Lys Thr Cys Gln Arg Lys Phe Ser Arg Ser Asp His Leu
     50                  55                  60
Lys Thr His Thr Arg Thr His Thr Gly Glu Lys Pro Phe Ser Cys Arg
 65                  70                  75                  80
Trp Pro Ser Cys Gln Lys Lys Phe Ala Arg Ser Asp Glu Leu Val Arg
                 85                  90                  95
His His Asn Met His Gln Arg Asn Met Thr Lys Leu Gln Leu Ala Leu
            100                 105                 110
```

<210> 346
<211> 369
<212> PRT
<213> Homo sapiens

<400> 346

```
Met Gln His His His His His His His Ser Phe Ile Lys Gln Glu Pro
                 5                  10                  15
Ser Trp Gly Gly Ala Glu Pro His Glu Glu Gln Cys Leu Ser Ala Phe
            20                  25                  30
Thr Val His Phe Ser Gly Gln Phe Thr Gly Thr Ala Gly Ala Cys Arg
        35                  40                  45
Tyr Gly Pro Phe Gly Pro Pro Pro Pro Ser Gln Ala Ser Ser Gly Gln
     50                  55                  60
Ala Arg Met Phe Pro Asn Ala Pro Tyr Leu Pro Ser Cys Leu Glu Ser
 65                  70                  75                  80
Gln Pro Ala Ile Arg Asn Gln Gly Tyr Ser Thr Val Thr Phe Asp Gly
                 85                  90                  95
```

```
Thr Pro Ser Tyr Gly His Thr Pro Ser His His Ala Ala Gln Phe Pro
            100                 105                 110
Asn His Ser Phe Lys His Glu Asp Pro Met Gly Gln Gln Gly Ser Leu
        115                 120                 125
Gly Glu Gln Gln Tyr Ser Val Pro Pro Pro Val Tyr Gly Cys His Thr
    130                 135                 140
Pro Thr Asp Ser Cys Thr Gly Ser Gln Ala Leu Leu Leu Arg Thr Pro
145                 150                 155                 160
Tyr Ser Ser Asp Asn Leu Tyr Gln Met Thr Ser Gln Leu Glu Cys Met
                165                 170                 175
Thr Trp Asn Gln Met Asn Leu Gly Ala Thr Leu Lys Gly His Ser Thr
            180                 185                 190
Gly Tyr Glu Ser Asp Asn His Thr Thr Pro Ile Leu Cys Gly Ala Gln
        195                 200                 205
Tyr Arg Ile His Thr His Gly Val Phe Arg Gly Ile Gln Asp Val Arg
    210                 215                 220
Arg Val Pro Gly Val Ala Pro Thr Leu Val Arg Ser Ala Ser Glu Thr
225                 230                 235                 240
Ser Glu Lys Arg Pro Phe Met Cys Ala Tyr Pro Gly Cys Asn Lys Arg
                245                 250                 255
Tyr Phe Lys Leu Ser His Leu Gln Met His Ser Arg Lys His Thr Gly
            260                 265                 270
Glu Lys Pro Tyr Gln Cys Asp Phe Lys Asp Cys Glu Arg Arg Phe Phe
        275                 280                 285
Arg Ser Asp Gln Leu Lys Arg His Gln Arg Arg His Thr Gly Val Lys
    290                 295                 300
Pro Phe Gln Cys Lys Thr Cys Gln Arg Lys Phe Ser Arg Ser Asp His
305                 310                 315                 320
Leu Lys Thr His Thr Arg Thr His Thr Gly Glu Lys Pro Phe Ser Cys
                325                 330                 335
Arg Trp Pro Ser Cys Gln Lys Lys Phe Ala Arg Ser Asp Glu Leu Val
            340                 345                 350
Arg His His Asn Met His Gln Arg Asn Met Thr Lys Leu Gln Leu Ala
        355                 360                 365
Leu
```

<210> 347
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Sense primer

<400> 347
ggctccgacg tgcgggacct g 21

<210> 348
<211> 30
<212> DNA
<213> Artificial Sequence

<220>

<223> Anti-sense Primer

<400> 348
gaattctcaa agcgccagct ggagtttggt 30

<210> 349
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Sense Primer

<400> 349
ggctccgacg tgcgggacct g 21

<210> 350
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Anti-sense Primer

<400> 350
gaattctcaa agcgccagct ggagtttggt 30

<210> 351
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Sense Primer

<400> 351
cacagcacag ggtacgagag c 21

<210> 352
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Anti-sense Primer

<400> 352
gaattctcaa agcgccagct ggagtttggt 30

<210> 353
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR Primer

<400> 353
cacgaagaac agtgcctgag cgcattcac 29

<210> 354
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR Primer

<400> 354
ccggcgaatt catcagtata aattgtcact gc 32

<210> 355
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR Primer

<400> 355
caggctttgc tgctgaggac gccc 24

<210> 356
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR Primer

<400> 356
cacggagaat tcatcactgg tatggtttct cacc 34

<210> 357
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR Primer

<400> 357
cacagcagga agcacactgg tgagaaac 28

<210> 358
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR Primer

<400> 358
ggatatctgc agaattctca aagcgccagc 30

<210> 359
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR Primer

<400> 359
cactccttca tcaaacagga ac 22

<210> 360
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR Primer

<400> 360
ggatatctgc agaattctca aagcgccagc 30

<210> 361
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 361
ggttccgacg tgcgggacct gaacgcactg ctg 33

<210> 362
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 362
ctgccggcag cagtgcgttc aggtcccgca cgtcggaacc 40

<210> 363
<211> 35
<212> DNA

<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 363
ccggcagttc catccctggg tggcggtgga ggctg 35

<210> 364
<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 364
cggcagtgcg cagcctccac cgccacccag ggatggaa 38

<210> 365
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 365
cgcactgccg gttagcggtg cagcacagtg ggctc 35

<210> 366
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 366
cagaactgga gcccactgtg ctgcaccgct aac 33

<210> 367
<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 367
cagttctgga cttcgcaccg cctggtgcat ccgcatac 38

<210> 368
<211> 39

<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 368
cagggaaccg tatgcggatg caccaggcgg tgcgaagtc 39

<210> 369
<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 369
ggttccctgg gtggtccagc acctccgccc gcaacgcc 38

<210> 370
<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 370
ggcggtgggg gcgttgcggg cggaggtgct ggaccacc 38

<210> 371
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 371
cccaccgcct ccaccgcccc cgcactcctt catcaaacag 40

<210> 372
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 372
ctaggttcct gtttgatgaa ggagtgcggg ggcggtgga 39

<210> 373

<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 373
gaacctagct ggggtggtgc agaaccgcac gaagaaca 38

<210> 374
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 374
ctcaggcact gttcttcgtg cggttctgca ccaccccag 39

<210> 375
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 375
gtgcctgagc gcattctgag aattctgcag at 32

<210> 376
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 376
gtgtgatgga tatctgcaga attctcagaa tgcg 34

<210> 377
<211> 1292
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 253,256,517,518,520,521,522,743,753,754,
758
<223> n = A,T,C or G

<400> 377
atgggctccg acgttcgtga cctgagcgcg ctgctgccgg cagttccgtc cctgggtgat 60
ggtggtggtt gcgcactgcc ggttagcggt gcagcacagt gggctccggt tctggacttc 120
gcaccgccgg gtgcatccgc acacggtccc ctgggtggtc cggcgccgcc gtcggcaccg 180
ccgccgccgc cgccgccgcc gccgcactcc ttcatcaaac agggaccgag ctggggtggc 240
gcggaactgc ackaakaaca gtacctgagc gcgttcaccg ttcactcctc cggtcaggtt 300
cactggcacg gccggggcct gtcgctacgg gcccctcggc ccccctccgc ccagccaggc 360
gtcatccggc caggccagga tgtctcctag cgcgccctgc ctgcccagcc gcctcgagag 420
ccagcccgct acccgcaatc ggggctacag cacggtcacc ttcgacgggg cgtccggcta 480
cggtcacacg ccctcgcacc atgcggcgca gttctcsmar yyactcgtta ggcgtgagga 540
tcccatgggc cagcagggtc cgctgggtga gcagcagtgc tcggcgccgc ccccggcctg 600
tggccgccac acccccgccg acagctgcgc cggcagccag gctttgctgc tgagggcgcc 660
ctgtagcagc gacggtttat accaagtgac gtcccagctt gagtgcatgg cctggagtca 720
gatgagcctc ggggccgcct tamcgggcca cakyacargg tacgagagcg atgatcacac 780
aacgcccggc ctctgcggag cccaatacag aatacacacg cacggtgcct tcaggggcgt 840
tcagggtgtg cgccgtgtgc ctggagtagc cccgactctt gtacggtcgg catctgaggc 900
cagtgaggaa cgccccctca tgtgtgctta cccaggctgc aataggaggt atctgaagct 960
gccccgctta cagatgcacg gtaggaagca cgctggtgag agaccatacc agtgtgactt 1020
caaggactgt ggacggaggt ttttctgctc agaccggctc aaaagacacc aggggaggca 1080
tacagatgtg aagccattcc agcgtaagac ctgtcagcga gggttctccc ggcccaacca 1140
cctgaagacc cacgccagga ctcatgcagg tgaaaagccc cccagctgtc ggtggtcaga 1200
ttgtcagaga aagcctgccc ggtcaagtga gttggtccgc catcgcgaca tgcatcagag 1260
gggcatgacc gaactccagc tggcgctttg aa 1292

<210> 378
<211> 1291
<212> DNA
<213> Homo sapiens

<400> 378
atgggctccg acgttcgtga cctaaacgca ctgctgccgg cagttccgtc cccgggtggt 60
ggtggtggtt gcgcactgcc ggttagcggt gcaacacagt gggctccggt tctggacttc 120
gtaccgccgg gtgcgcctgt atgcggttcc ctgggtggcc cggcaccgcc gccagcgccg 180
ccgccgctgc cgccgccgcc gtcgcactcc ttcaccaaac aggaaccgag ttggggtggt 240
acagagccgc acgcaggaca gggccggagc gcactcgtcg ctcactcctc cggccagttc 300
actggcacag ccggagcctg tcgctacggg cccttcggtc ctcctccgcc cagccaggcg 360
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agccaggcgt catccggcca ggccaggatg tttcctaacg cgccctacct gcccagctgc 600
ctcgagagcc agcccgctat tcgcaatcag ggttacagca cggtcacctt cgacgggacg 660
cccagctacg gtcacacgcc ctcgcaccat gcggcgcagt tccccaacca ctcattcaag 720
catgaggatc ccatgggcca gcagggctcg ctgggtgagc agcagtactc ggtgccgccc 780
ccggtctatg gctgccacac ccccaccgac agctgcaccg gcagccaggc tttgctgctg 840
aggacgccct acagcagtga caatttatac caaatgacat cccagcttga atgcatgacc 900
tggaatcaga tgaacttagg agccacctta aagggccaca gcacagggta cgagagcgat 960
aaccacacaa cgcccatcct ctgcggagcc caatacagaa tacacacgca cggtgtcttc 1020
agaggcattc agtga 1035

<210> 389
<211> 1263
<212> DNA
<213> Homo sapiens

<400> 389
atgacggccg cgtccgataa cttccagctg tcccagggtg ggcagggatt cgccattccg 60
atcgggcagg cgatggcgat cgcgggccag atcaagcttc ccaccgttca tatcgggcct 120
accgccttcc tcggcttggg tgttgtcgac aacaacggca acggcgcacg agtccaacgc 180
gtggtcggga gcgctccggc ggcaagtctc ggcatctcca ccggcgacgt gatcaccgcg 240
gtcgacggcg ctccgatcaa ctcggccacc gcgatggcgg acgcgcttaa cgggcatcat 300
cccggtgacg tcatctcggt gacctggcaa accaagtcgg gcggcacgcg tacagggaac 360
gtgacattgg ccgagggacc cccggccgaa ttcccgctgg tgccgcgcgg cagcccgatg 420
ggctccgacg ttcgggacct gaacgcactg ctgccggcag ttccgtccct gggtggtggt 480
ggtggttgcg cactgccggt tagcggtgca gcacagtggg ctccggttct ggacttcgca 540
ccgccgggtg catccgcata cggttccctg ggtggtccgg caccgccgcc ggcaccgccg 600
ccgccgccgc cgccgccgcc gcactccttc atcaaacagg aaccgagctg gggtggtgca 660
gaaccgcacg aagaacagtg cctgagcgca ttcaccgttc acttctccgg ccagttcact 720
ggcacagccg gagcctgtcg ctacgggccc ttcggtcctc ctccgcccag ccaggcgtca 780
tccggccagg ccaggatgtt tcctaacgcg ccctacctgc ccagctgcct cgagagccag 840
cccgctattc gcaatcaggg ttacagcacg gtcaccttcg acgggacgcc cagctacggt 900
cacacgccct cgcaccatgc ggcgcagttc cccaaccact cattcaagca tgaggatccc 960
atgggccagc agggctcgct gggtgagcag cagtactcgg tgccgccccc ggtctatggc 1020
tgccacaccc ccaccgacag ctgcaccggc agccaggctt tgctgctgag gacgccctac 1080
agcagtgaca atttatacca aatgacatcc cagcttgaat gcatgacctg gaatcagatg 1140
aacttaggag ccaccttaaa gggccacagc acagggtacg agagcgataa ccacacaacg 1200

cccatcctct gcggagccca atacagaata cacacgcacg gtgtcttcag aggcattcag 1260
tga 1263

<210> 390
<211> 1707
<212> DNA
<213> Homo sapiens

<400> 390
atgacggccg cgtccgataa cttccagctg tcccagggtg ggcagggatt cgccattccg 60
atcgggcagg cgatggcgat cgcgggccag atcaagcttc ccaccgttca tatcgggcct 120
accgccttcc tcggcttggg tgttgtcgac aacaacggca acggcgcacg agtccaacgc 180
gtggtcggga gcgctccggc ggcaagtctc ggcatctcca ccggcgacgt gatcaccgcg 240
gtcgacggcg ctccgatcaa ctcggccacc gcgatggcgg acgcgcttaa cgggcatcat 300
cccggtgacg tcatctcggt gacctggcaa accaagtcgg gcggcacgcg tacagggaac 360
gtgacattgg ccgagggacc cccggccgaa ttcccgctgg tgccgcgcgg cagcccgatg 420
ggctccgacg ttcgggacct gaacgcactg ctgccggcag ttccgtccct gggtggtggt 480
ggtggttgcg cactgccggt tagcggtgca gcacagtggg ctccggttct ggacttcgca 540
ccgccgggtg catccgcata cggttccctg ggtggtccgg caccgccgcc ggcaccgccg 600
ccgccgccgc cgccgccgcc gcactccttc atcaaacagg aaccgagctg gggtggtgca 660
gaaccgcacg aagaacagtg cctgagcgca ttcaccgttc acttctccgg ccagttcact 720
ggcacagccg gagcctgtcg ctacgggccc ttcggtcctc ctccgcccag ccaggcgtca 780
tccggccagg ccaggatgtt tcctaacgcg ccctacctgc ccagctgcct cgagagccag 840
cccgctattc gcaatcaggg ttacagcacg gtcaccttcg acgggacgcc cagctacggt 900
cacacgccct cgcaccatgc ggcgcagttc cccaaccact cattcaagca tgaggatccc 960
atgggccagc agggctcgct gggtgagcag cagtactcgg tgccgccccc ggtctatggc 1020
tgccacaccc ccaccgacag ctgcaccggc agccaggctt tgctgctgag gacgccctac 1080
agcagtgaca atttatacca aatgacatcc cagcttgaat gcatgacctg gaatcagatg 1140
aacttaggag ccaccttaaa gggccacagc acagggtacg agagcgataa ccacacaacg 1200
cccatcctct gcggagccca atacagaata cacacgcacg gtgtcttcag aggcattcag 1260
gatgtgcgac gtgtgcctgg agtagccccg actcttgtac ggtcggcatc tgagaccagt 1320
gagaaacgcc ccttcatgtg tgcttaccca ggctgcaata agagatattt taagctgtcc 1380
cacttacaga tgcacagcag gaagcacact ggtgagaaac cataccagtg tgacttcaag 1440
gactgtgaac gaaggttttt tcgttcagac cagctcaaaa gacaccaaag gagacataca 1500
ggtgtgaaac cattccagtg taaaacttgt cagcgaaagt tctcccggtc cgaccacctg 1560
aagacccaca ccaggactca tacaggtgaa aagcccttca gctgtcggtg gccaagttgt 1620
cagaaaaagt ttgcccggtc agatgaatta gtccgccatc acaacatgca tcagagaaac 1680
atgaccaaac tccagctggc gctttga 1707

<210> 391
<211> 344
<212> PRT
<213> Homo sapiens

<400> 391
Met Thr Ala Ala Ser Asp Asn Phe Gln Leu Ser Gln Gly Gly Gln Gly
1 5 10 15

Phe Ala Ile Pro Ile Gly Gln Ala Met Ala Ile Ala Gly Gln Ile Lys
20 25 30

Leu Pro Thr Val His Ile Gly Pro Thr Ala Phe Leu Gly Leu Gly Val
35 40 45

```
Val Asp Asn Asn Gly Asn Gly Ala Arg Val Gln Arg Val Val Gly Ser
     50                  55                  60

Ala Pro Ala Ala Ser Leu Gly Ile Ser Thr Gly Asp Val Ile Thr Ala
 65                  70                  75                  80

Val Asp Gly Ala Pro Ile Asn Ser Ala Thr Ala Met Ala Asp Ala Leu
                 85                  90                  95

Asn Gly His His Pro Gly Asp Val Ile Ser Val Thr Trp Gln Thr Lys
            100                 105                 110

Ser Gly Gly Thr Arg Thr Gly Asn Val Thr Leu Ala Glu Gly Pro Pro
        115                 120                 125

Ala Glu Phe His Ser Phe Ile Lys Gln Glu Pro Ser Trp Gly Gly Ala
    130                 135                 140

Glu Pro His Glu Glu Gln Cys Leu Ser Ala Phe Thr Val His Phe Ser
145                 150                 155                 160

Gly Gln Phe Thr Gly Thr Ala Gly Ala Cys Arg Tyr Gly Pro Phe Gly
                165                 170                 175

Pro Pro Pro Pro Ser Gln Ala Ser Ser Gly Gln Ala Arg Met Phe Pro
            180                 185                 190

Asn Ala Pro Tyr Leu Pro Ser Cys Leu Glu Ser Gln Pro Ala Ile Arg
        195                 200                 205

Asn Gln Gly Tyr Ser Thr Val Thr Phe Asp Gly Thr Pro Ser Tyr Gly
    210                 215                 220

His Thr Pro Ser His His Ala Ala Gln Phe Pro Asn His Ser Phe Lys
225                 230                 235                 240

His Glu Asp Pro Met Gly Gln Gln Gly Ser Leu Gly Glu Gln Gln Tyr
                245                 250                 255

Ser Val Pro Pro Pro Val Tyr Gly Cys His Thr Pro Thr Asp Ser Cys
            260                 265                 270

Thr Gly Ser Gln Ala Leu Leu Leu Arg Thr Pro Tyr Ser Ser Asp Asn
        275                 280                 285

Leu Tyr Gln Met Thr Ser Gln Leu Glu Cys Met Thr Trp Asn Gln Met
    290                 295                 300

Asn Leu Gly Ala Thr Leu Lys Gly His Ser Thr Gly Tyr Glu Ser Asp
305                 310                 315                 320

Asn His Thr Thr Pro Ile Leu Cys Gly Ala Gln Tyr Arg Ile His Thr
                325                 330                 335
```

```
His Gly Val Phe Arg Gly Ile Gln
            340


<210> 392
<211> 568
<212> PRT
<213> Homo sapiens

<400> 392
Met Thr Ala Ala Ser Asp Asn Phe Gln Leu Ser Gln Gly Gly Gln Gly
                  5                  10                  15

Phe Ala Ile Pro Ile Gly Gln Ala Met Ala Ile Ala Gly Gln Ile Lys
             20                  25                  30

Leu Pro Thr Val His Ile Gly Pro Thr Ala Phe Leu Gly Leu Gly Val
         35                  40                  45

Val Asp Asn Asn Gly Asn Gly Ala Arg Val Gln Arg Val Val Gly Ser
     50                  55                  60

Ala Pro Ala Ala Ser Leu Gly Ile Ser Thr Gly Asp Val Ile Thr Ala
 65                  70                  75                  80

Val Asp Gly Ala Pro Ile Asn Ser Ala Thr Ala Met Ala Asp Ala Leu
                 85                  90                  95

Asn Gly His His Pro Gly Asp Val Ile Ser Val Thr Trp Gln Thr Lys
            100                 105                 110

Ser Gly Gly Thr Arg Thr Gly Asn Val Thr Leu Ala Glu Gly Pro Pro
        115                 120                 125

Ala Glu Phe Pro Leu Val Pro Arg Gly Ser Pro Met Gly Ser Asp Val
    130                 135                 140

Arg Asp Leu Asn Ala Leu Leu Pro Ala Val Pro Ser Leu Gly Gly Gly
145                 150                 155                 160

Gly Gly Cys Ala Leu Pro Val Ser Gly Ala Ala Gln Trp Ala Pro Val
                165                 170                 175

Leu Asp Phe Ala Pro Pro Gly Ala Ser Ala Tyr Gly Ser Leu Gly Gly
            180                 185                 190

Pro Ala Pro Pro Pro Ala Pro Pro Pro Pro Pro Pro Pro Pro Pro His
        195                 200                 205

Ser Phe Ile Lys Gln Glu Pro Ser Trp Gly Gly Ala Glu Pro His Glu
    210                 215                 220

Glu Gln Cys Leu Ser Ala Phe Thr Val His Phe Ser Gly Gln Phe Thr
225                 230                 235                 240
```

```
Gly Thr Ala Gly Ala Cys Arg Tyr Gly Pro Phe Gly Pro Pro Pro Pro
                245                 250                 255

Ser Gln Ala Ser Ser Gly Gln Ala Arg Met Phe Pro Asn Ala Pro Tyr
            260                 265                 270

Leu Pro Ser Cys Leu Glu Ser Gln Pro Ala Ile Arg Asn Gln Gly Tyr
        275                 280                 285

Ser Thr Val Thr Phe Asp Gly Thr Pro Ser Tyr Gly His Thr Pro Ser
    290                 295                 300

His His Ala Ala Gln Phe Pro Asn His Ser Phe Lys His Glu Asp Pro
305                 310                 315                 320

Met Gly Gln Gln Gly Ser Leu Gly Glu Gln Gln Tyr Ser Val Pro Pro
                325                 330                 335

Pro Val Tyr Gly Cys His Thr Pro Thr Asp Ser Cys Thr Gly Ser Gln
            340                 345                 350

Ala Leu Leu Leu Arg Thr Pro Tyr Ser Ser Asp Asn Leu Tyr Gln Met
        355                 360                 365

Thr Ser Gln Leu Glu Cys Met Thr Trp Asn Gln Met Asn Leu Gly Ala
    370                 375                 380

Thr Leu Lys Gly His Ser Thr Gly Tyr Glu Ser Asp Asn His Thr Thr
385                 390                 395                 400

Pro Ile Leu Cys Gly Ala Gln Tyr Arg Ile His Thr His Gly Val Phe
                405                 410                 415

Arg Gly Ile Gln Asp Val Arg Arg Val Pro Gly Val Ala Pro Thr Leu
            420                 425                 430

Val Arg Ser Ala Ser Glu Thr Ser Glu Lys Arg Pro Phe Met Cys Ala
        435                 440                 445

Tyr Pro Gly Cys Asn Lys Arg Tyr Phe Lys Leu Ser His Leu Gln Met
    450                 455                 460

His Ser Arg Lys His Thr Gly Glu Lys Pro Tyr Gln Cys Asp Phe Lys
465                 470                 475                 480

Asp Cys Glu Arg Arg Phe Phe Arg Ser Asp Gln Leu Lys Arg His Gln
                485                 490                 495

Arg Arg His Thr Gly Val Lys Pro Phe Gln Cys Lys Thr Cys Gln Arg
            500                 505                 510

Lys Phe Ser Arg Ser Asp His Leu Lys Thr His Thr Arg Thr His Thr
        515                 520                 525
```

```
Gly Glu Lys Pro Phe Ser Cys Arg Trp Pro Ser Cys Gln Lys Lys Phe
    530                 535                 540

Ala Arg Ser Asp Glu Leu Val Arg His His Asn Met His Gln Arg Asn
545                 550                 555                 560

Met Thr Lys Leu Gln Leu Ala Leu
                565
```

<210> 393
<211> 420
<212> PRT
<213> Homo sapiens

<400> 393

```
Met Thr Ala Ala Ser Asp Asn Phe Gln Leu Ser Gln Gly Gly Gln Gly
                  5                  10                  15

Phe Ala Ile Pro Ile Gly Gln Ala Met Ala Ile Ala Gly Gln Ile Lys
             20                  25                  30

Leu Pro Thr Val His Ile Gly Pro Thr Ala Phe Leu Gly Leu Gly Val
         35                  40                  45

Val Asp Asn Asn Gly Asn Gly Ala Arg Val Gln Arg Val Val Gly Ser
     50                  55                  60

Ala Pro Ala Ala Ser Leu Gly Ile Ser Thr Gly Asp Val Ile Thr Ala
 65                  70                  75                  80

Val Asp Gly Ala Pro Ile Asn Ser Ala Thr Ala Met Ala Asp Ala Leu
                 85                  90                  95

Asn Gly His His Pro Gly Asp Val Ile Ser Val Thr Trp Gln Thr Lys
            100                 105                 110

Ser Gly Gly Thr Arg Thr Gly Asn Val Thr Leu Ala Glu Gly Pro Pro
        115                 120                 125

Ala Glu Phe Pro Leu Val Pro Arg Gly Ser Pro Met Gly Ser Asp Val
    130                 135                 140

Arg Asp Leu Asn Ala Leu Leu Pro Ala Val Pro Ser Leu Gly Gly Gly
145                 150                 155                 160

Gly Gly Cys Ala Leu Pro Val Ser Gly Ala Ala Gln Trp Ala Pro Val
                165                 170                 175

Leu Asp Phe Ala Pro Pro Gly Ala Ser Ala Tyr Gly Ser Leu Gly Gly
            180                 185                 190

Pro Ala Pro Pro Pro Ala Pro Pro Pro Pro Pro Pro Pro Pro Pro His
```

```
        195                 200                 205

Ser Phe Ile Lys Gln Glu Pro Ser Trp Gly Gly Ala Glu Pro His Glu
    210                 215                 220

Glu Gln Cys Leu Ser Ala Phe Thr Val His Phe Ser Gly Gln Phe Thr
225                 230                 235                 240

Gly Thr Ala Gly Ala Cys Arg Tyr Gly Pro Phe Gly Pro Pro Pro Pro
                245                 250                 255

Ser Gln Ala Ser Ser Gly Gln Ala Arg Met Phe Pro Asn Ala Pro Tyr
            260                 265                 270

Leu Pro Ser Cys Leu Glu Ser Gln Pro Ala Ile Arg Asn Gln Gly Tyr
        275                 280                 285

Ser Thr Val Thr Phe Asp Gly Thr Pro Ser Tyr Gly His Thr Pro Ser
    290                 295                 300

His His Ala Ala Gln Phe Pro Asn His Ser Phe Lys His Glu Asp Pro
305                 310                 315                 320

Met Gly Gln Gln Gly Ser Leu Gly Glu Gln Gln Tyr Ser Val Pro Pro
                325                 330                 335

Pro Val Tyr Gly Cys His Thr Pro Thr Asp Ser Cys Thr Gly Ser Gln
            340                 345                 350

Ala Leu Leu Leu Arg Thr Pro Tyr Ser Ser Asp Asn Leu Tyr Gln Met
        355                 360                 365

Thr Ser Gln Leu Glu Cys Met Thr Trp Asn Gln Met Asn Leu Gly Ala
    370                 375                 380

Thr Leu Lys Gly His Ser Thr Gly Tyr Glu Ser Asp Asn His Thr Thr
385                 390                 395                 400

Pro Ile Leu Cys Gly Ala Gln Tyr Arg Ile His Thr His Gly Val Phe
                405                 410                 415

Arg Gly Ile Gln
            420
```

<210> 394
<211> 362
<212> PRT
<213> Homo sapiens

<400> 394

```
Met His Ser Phe Ile Lys Gln Glu Pro Ser Trp Gly Gly Ala Glu Pro
                5                  10                  15
```

```
His Glu Glu Gln Cys Leu Ser Ala Phe Thr Val His Phe Ser Gly Gln
            20                  25                  30

Phe Thr Gly Thr Ala Gly Ala Cys Arg Tyr Gly Pro Phe Gly Pro Pro
        35                  40                  45

Pro Pro Ser Gln Ala Ser Ser Gly Gln Ala Arg Met Phe Pro Asn Ala
    50                  55                  60

Pro Tyr Leu Pro Ser Cys Leu Glu Ser Gln Pro Ala Ile Arg Asn Gln
65                  70                  75                  80

Gly Tyr Ser Thr Val Thr Phe Asp Gly Thr Pro Ser Tyr Gly His Thr
                85                  90                  95

Pro Ser His His Ala Ala Gln Phe Pro Asn His Ser Phe Lys His Glu
            100                 105                 110

Asp Pro Met Gly Gln Gln Gly Ser Leu Gly Glu Gln Gln Tyr Ser Val
        115                 120                 125

Pro Pro Pro Val Tyr Gly Cys His Thr Pro Thr Asp Ser Cys Thr Gly
    130                 135                 140

Ser Gln Ala Leu Leu Leu Arg Thr Pro Tyr Ser Ser Asp Asn Leu Tyr
145                 150                 155                 160

Gln Met Thr Ser Gln Leu Glu Cys Met Thr Trp Asn Gln Met Asn Leu
                165                 170                 175

Gly Ala Thr Leu Lys Gly His Ser Thr Gly Tyr Glu Ser Asp Asn His
            180                 185                 190

Thr Thr Pro Ile Leu Cys Gly Ala Gln Tyr Arg Ile His Thr His Gly
        195                 200                 205

Val Phe Arg Gly Ile Gln Asp Val Arg Arg Val Pro Gly Val Ala Pro
    210                 215                 220

Thr Leu Val Arg Ser Ala Ser Glu Thr Ser Glu Lys Arg Pro Phe Met
225                 230                 235                 240

Cys Ala Tyr Pro Gly Cys Asn Lys Arg Tyr Phe Lys Leu Ser His Leu
                245                 250                 255

Gln Met His Ser Arg Lys His Thr Gly Glu Lys Pro Tyr Gln Cys Asp
            260                 265                 270

Phe Lys Asp Cys Glu Arg Arg Phe Phe Arg Ser Asp Gln Leu Lys Arg
        275                 280                 285

His Gln Arg Arg His Thr Gly Val Lys Pro Phe Gln Cys Lys Thr Cys
    290                 295                 300
```

```
Gln Arg Lys Phe Ser Arg Ser Asp His Leu Lys Thr His Thr Arg Thr
305                 310                 315                 320

His Thr Gly Glu Lys Pro Phe Ser Cys Arg Trp Pro Ser Cys Gln Lys
                325                 330                 335

Lys Phe Ala Arg Ser Asp Glu Leu Val Arg His His Asn Met His Gln
            340                 345                 350

Arg Asn Met Thr Lys Leu Gln Leu Ala Leu
        355                 360


<210> 395
<211> 214
<212> PRT
<213> Homo sapiens

<400> 395
Met His Ser Phe Ile Lys Gln Glu Pro Ser Trp Gly Gly Ala Glu Pro
                  5                  10                  15

His Glu Glu Gln Cys Leu Ser Ala Phe Thr Val His Phe Ser Gly Gln
             20                  25                  30

Phe Thr Gly Thr Ala Gly Ala Cys Arg Tyr Gly Pro Phe Gly Pro Pro
         35                  40                  45

Pro Pro Ser Gln Ala Ser Ser Gly Gln Ala Arg Met Phe Pro Asn Ala
     50                  55                  60

Pro Tyr Leu Pro Ser Cys Leu Glu Ser Gln Pro Ala Ile Arg Asn Gln
 65                  70                  75                  80

Gly Tyr Ser Thr Val Thr Phe Asp Gly Thr Pro Ser Tyr Gly His Thr
                 85                  90                  95

Pro Ser His His Ala Ala Gln Phe Pro Asn His Ser Phe Lys His Glu
            100                 105                 110

Asp Pro Met Gly Gln Gln Gly Ser Leu Gly Glu Gln Gln Tyr Ser Val
        115                 120                 125

Pro Pro Pro Val Tyr Gly Cys His Thr Pro Thr Asp Ser Cys Thr Gly
    130                 135                 140

Ser Gln Ala Leu Leu Leu Arg Thr Pro Tyr Ser Ser Asp Asn Leu Tyr
145                 150                 155                 160

Gln Met Thr Ser Gln Leu Glu Cys Met Thr Trp Asn Gln Met Asn Leu
                165                 170                 175

Gly Ala Thr Leu Lys Gly His Ser Thr Gly Tyr Glu Ser Asp Asn His
            180                 185                 190
```

Thr Thr Pro Ile Leu Cys Gly Ala Gln Tyr Arg Ile His Thr His Gly
195 200 205

Val Phe Arg Gly Ile Gln
210

<210> 396
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 396
gacgaaagca tatgcactcc ttcatcaaac 30

<210> 397
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 397
cgcgtgaatt catcactgaa tgcctctgaa g 31

<210> 398
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 398
cgataagcat atgacggccg cgtccgataa c 31

<210> 399
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 399
cgcgtgaatt catcactgaa tgcctctgaa g 31

<210> 400

<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 400
cgataagcat atgacggccg cgtccgataa c 31

<210> 401
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 401
gtctgcagcg gccgctcaaa gcgccagc 28

<210> 402
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 402
gacgaaagca tatgcactcc ttcatcaaac 30

<210> 403
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 403
gtctgcagcg gccgctcaaa gcgccagc 28

<210> 404
<211> 449
<212> PRT
<213> Homo sapiens

<400> 404
Met Gly Ser Asp Val Arg Asp Leu Asn Ala Leu Leu Pro Ala Val Pro
1 5 10 15
Ser Leu Gly Gly Gly Gly Gly Cys Ala Leu Pro Val Ser Gly Ala Ala
20 25 30

```
Gln Trp Ala Pro Val Leu Asp Phe Ala Pro Pro Gly Ala Ser Ala Tyr
        35                  40                  45
Gly Ser Leu Gly Gly Pro Ala Pro Pro Pro Ala Pro Pro Pro Pro Pro
    50                  55                  60
Pro Pro Pro Pro His Ser Phe Ile Lys Gln Glu Pro Ser Trp Gly Gly
65                  70                  75                  80
Ala Glu Pro His Glu Glu Gln Cys Leu Ser Ala Phe Thr Val His Phe
                85                  90                  95
Ser Gly Gln Phe Thr Gly Thr Ala Gly Ala Cys Arg Tyr Gly Pro Phe
            100                 105                 110
Gly Pro Pro Pro Pro Ser Gln Ala Ser Ser Gly Gln Ala Arg Met Phe
        115                 120                 125
Pro Asn Ala Pro Tyr Leu Pro Ser Cys Leu Glu Ser Gln Pro Ala Ile
    130                 135                 140
Arg Asn Gln Gly Tyr Ser Thr Val Thr Phe Asp Gly Thr Pro Ser Tyr
145                 150                 155                 160
Gly His Thr Pro Ser His His Ala Ala Gln Phe Pro Asn His Ser Phe
                165                 170                 175
Lys His Glu Asp Pro Met Gly Gln Gln Gly Ser Leu Gly Glu Gln Gln
            180                 185                 190
Tyr Ser Val Pro Pro Pro Val Tyr Gly Cys His Thr Pro Thr Asp Ser
        195                 200                 205
Cys Thr Gly Ser Gln Ala Leu Leu Leu Arg Thr Pro Tyr Ser Ser Asp
    210                 215                 220
Asn Leu Tyr Gln Met Thr Ser Gln Leu Glu Cys Met Thr Trp Asn Gln
225                 230                 235                 240
Met Asn Leu Gly Ala Thr Leu Lys Gly Val Ala Ala Gly Ser Ser Ser
                245                 250                 255
Ser Val Lys Trp Thr Glu Gly Gln Ser Asn His Ser Thr Gly Tyr Glu
            260                 265                 270
Ser Asp Asn His Thr Thr Pro Ile Leu Cys Gly Ala Gln Tyr Arg Ile
        275                 280                 285
His Thr His Gly Val Phe Arg Gly Ile Gln Asp Val Arg Arg Val Pro
    290                 295                 300
Gly Val Ala Pro Thr Leu Val Arg Ser Ala Ser Glu Thr Ser Glu Lys
305                 310                 315                 320
Arg Pro Phe Met Cys Ala Tyr Pro Gly Cys Asn Lys Arg Tyr Phe Lys
                325                 330                 335
Leu Ser His Leu Gln Met His Ser Arg Lys His Thr Gly Glu Lys Pro
            340                 345                 350
Tyr Gln Cys Asp Phe Lys Asp Cys Glu Arg Arg Phe Ser Arg Ser Asp
        355                 360                 365
Gln Leu Lys Arg His Gln Arg Arg His Thr Gly Val Lys Pro Phe Gln
    370                 375                 380
Cys Lys Thr Cys Gln Arg Lys Phe Ser Arg Ser Asp His Leu Lys Thr
385                 390                 395                 400
His Thr Arg Thr His Thr Gly Lys Thr Ser Glu Lys Pro Phe Ser Cys
                405                 410                 415
Arg Trp Pro Ser Cys Gln Lys Lys Phe Ala Arg Ser Asp Glu Leu Val
            420                 425                 430
Arg His His Asn Met His Gln Arg Asn Met Thr Lys Leu Gln Leu Ala
        435                 440                 445
Leu
```

<210> 405
<211> 428
<212> PRT
<213> Homo sapiens

<400> 405
Met Gly Ser Asp Val Arg Asp Leu Asn Ala Leu Leu Pro Ala Val Pro
1 5 10 15
Ser Pro Gly Gly Gly Gly Gly Cys Ala Leu Pro Val Ser Gly Ala Thr
20 25 30
Gln Trp Ala Pro Val Leu Asp Phe Val Pro Pro Gly Ala Pro Val Cys
35 40 45
Gly Ser Leu Gly Gly Pro Ala Pro Pro Pro Ala Pro Pro Pro Leu Pro
50 55 60
Pro Pro Pro Ser His Ser Phe Thr Lys Gln Glu Pro Ser Trp Gly Gly
65 70 75 80
Thr Glu Pro His Ala Gly Gln Gly Arg Ser Ala Leu Val Ala His Ser
85 90 95
Ser Gly Gln Phe Thr Gly Thr Ala Gly Ala Cys Arg Tyr Gly Pro Phe
100 105 110
Gly Pro Pro Pro Pro Ser Gln Ala Ser Ser Gly Gln Ala Arg Met Phe
115 120 125
Pro Asn Ala Pro Tyr Leu Pro Ser Cys Leu Glu Ser Gln Pro Ala Ile
130 135 140
Arg Asn Gln Gly Tyr Ser Thr Val Thr Phe Asp Gly Thr Pro Ser Tyr
145 150 155 160
Gly His Thr Pro Ser His His Ala Ala Gln Phe Pro Asn His Ser Ser
165 170 175
Lys His Glu Asp Pro Met Gly Gln Gln Gly Ser Pro Gly Glu Gln Gln
180 185 190
Tyr Ser Ala Pro Pro Pro Val Cys Gly Cys Arg Thr Pro Thr Gly Ser
195 200 205
Cys Thr Gly Ser Gln Ala Leu Leu Leu Arg Ala Pro Tyr Ser Gly Gly
210 215 220
Asp Leu His Gln Thr Thr Ser Gln Leu Gly His Met Ala Trp Asn Gln
225 230 235 240
Thr Asn Leu Gly Ala Thr Leu Lys Gly His Gly Thr Gly Tyr Glu Ser
245 250 255
Asp Asp His Thr Thr Pro Ile Leu Cys Gly Thr Gln Tyr Arg Ile Arg
260 265 270
Ala Arg Gly Val Leu Arg Gly Thr Gln Asp Val Arg Cys Val Pro Gly
275 280 285
Val Ala Pro Thr Leu Val Arg Ser Ala Ser Glu Thr Ser Glu Lys Arg
290 295 300
Pro Leu Met Cys Ala Tyr Pro Gly Cys Asn Lys Arg His Phe Lys Pro
305 310 315 320
Ser Arg Leu Arg Val Arg Gly Arg Glu Arg Thr Gly Glu Lys Pro Tyr
325 330 335
Gln Arg Asp Phe Lys Asp Arg Gly Arg Gly Leu Leu Arg Pro Asp Gln
340 345 350
Leu Lys Arg His Gln Arg Gly His Thr Gly Val Lys Pro Leu Gln Cys
355 360 365

```
Glu Ala Arg Arg Arg Pro Pro Arg Pro Gly His Leu Lys Val His Thr
    370                 375                 380
Arg Thr His Thr Gly Gly Glu Pro Phe Ser Cys Arg Trp Pro Ser Cys
385                 390                 395                 400
Gln Glu Lys Ser Ala Arg Pro Asp Glu Ser Ala Arg Arg His Asn Met
                405                 410                 415
His Gln Arg Asn Met Thr Lys Leu Gln Leu Ala Leu
            420                 425


<210> 406
<211> 414
<212> PRT
<213> Homo sapiens

<220>
<221> VARIANT
<222> 85, 86, 172, 173, 242, 245, 246, 247
<223> Xaa = Any Amino Acid

<400> 406
Met Gly Ser Asp Val Arg Asp Leu Ser Ala Leu Leu Pro Ala Val Pro
 1               5                  10                  15
Ser Leu Gly Asp Gly Gly Gly Cys Ala Leu Pro Val Ser Gly Ala Ala
            20                  25                  30
Gln Trp Ala Pro Val Leu Asp Phe Ala Pro Pro Gly Ala Ser Ala His
        35                  40                  45
Gly Pro Leu Gly Gly Pro Ala Pro Pro Ser Ala Pro Pro Pro Pro Pro
    50                  55                  60
Pro Pro Pro Pro His Ser Phe Ile Lys Gln Gly Pro Ser Trp Gly Gly
65                  70                  75                  80
Ala Glu Leu His Xaa Xaa Gln Tyr Leu Ser Ala Phe Thr Val His Ser
                85                  90                  95
Ser Gly Gln Val His Trp His Gly Arg Gly Leu Ser Leu Arg Ala Pro
            100                 105                 110
Arg Pro Pro Ser Ala Gln Pro Gly Val Ile Arg Pro Gly Gln Asp Val
        115                 120                 125
Ser Arg Ala Leu Pro Ala Gln Pro Pro Arg Glu Pro Ala Arg Tyr Pro
    130                 135                 140
Gln Ser Gly Leu Gln His Gly His Leu Arg Arg Gly Val Arg Leu Arg
145                 150                 155                 160
Ser His Ala Leu Ala Pro Cys Gly Ala Val Leu Xaa Xaa Thr Arg Ala
                165                 170                 175
Gly Ser His Gly Pro Ala Gly Ser Ala Gly Ala Ala Val Leu Gly Ala
            180                 185                 190
Ala Pro Gly Leu Trp Pro Pro His Pro Arg Arg Gln Leu Arg Arg Gln
        195                 200                 205
Pro Gly Phe Ala Ala Glu Gly Ala Leu Gln Arg Arg Phe Ile Pro Ser
    210                 215                 220
Asp Val Pro Ala Val His Gly Leu Glu Ser Asp Glu Pro Arg Gly Arg
225                 230                 235                 240
Leu Xaa Gly Pro Xaa Xaa Xaa Val Arg Glu Arg Ser His Asn Ala Arg
                245                 250                 255
Pro Leu Arg Ser Pro Ile Gln Asn Thr His Ala Arg Cys Leu Gln Gly
```

```
            260                 265                 270
Arg Ser Gly Cys Ala Pro Cys Ala Trp Ser Ser Pro Asp Ser Cys Thr
        275                 280                 285
Val Gly Ile Gly Gln Gly Thr Pro Pro His Val Cys Leu Pro Arg Leu
    290                 295                 300
Gln Glu Val Ser Glu Ala Ala Pro Leu Thr Asp Ala Arg Glu Ala Arg
305                 310                 315                 320
Trp Glu Thr Ile Pro Val Leu Gln Gly Leu Trp Thr Glu Val Phe Leu
                325                 330                 335
Leu Arg Pro Ala Gln Lys Thr Pro Gly Glu Ala Tyr Arg Cys Glu Ala
            340                 345                 350
Ile Pro Ala Asp Leu Ser Ala Arg Val Leu Pro Ala Gln Pro Pro Glu
        355                 360                 365
Asp Pro Arg Gln Asp Ser Cys Arg Lys Ala Pro Gln Leu Ser Val Val
    370                 375                 380
Arg Leu Ser Glu Lys Ala Cys Pro Val Lys Val Gly Pro Pro Ser Arg
385                 390                 395                 400
His Ala Ser Glu Gly His Asp Arg Thr Pro Ala Gly Ala Leu
                405                 410
```

<210> 407
<211> 417
<212> PRT
<213> Homo sapiens

<400> 407

```
Met Gly Ser Asp Val Arg Asp Leu Ser Ala Leu Leu Pro Thr Ala Pro
 1               5                  10                  15
Ser Leu Gly Gly Gly Gly Asp Cys Thr Leu Pro Val Ser Gly Thr Ala
            20                  25                  30
Gln Trp Ala Pro Val Pro Ala Ser Ala Pro Pro Gly Ala Ser Ala Tyr
        35                  40                  45
Asp Ser Leu Gly Gly Pro Ala Pro Pro Pro Ala Pro Pro Pro Pro Pro
    50                  55                  60
Pro Pro Pro Pro His Ser Cys Gly Glu Gln Gly Pro Ser Trp Gly Gly
65                  70                  75                  80
Ala Glu Pro Arg Glu Gly Gln Cys Leu Ser Ala Pro Ala Val Arg Phe
                85                  90                  95
Ser Gly Arg Phe Thr Gly Thr Val Gly Ala Cys Arg Tyr Gly Pro Leu
            100                 105                 110
Gly Pro Pro Pro Pro Ser Gln Ala Pro Ser Gly Gln Thr Arg Met Leu
        115                 120                 125
Pro Ser Ala Pro Tyr Leu Ser Ser Cys Leu Arg Ser Arg Ser Ala Ile
    130                 135                 140
Arg Ser Gln Gly Arg Ser Thr Ala Pro Ser Ala Gly Arg Pro Ala Met
145                 150                 155                 160
Ala Pro Thr Leu Ala Pro Pro Ala Gln Ser His Tyr Ser Gln His Gly
                165                 170                 175
Val Leu His Gly Pro Ala Gly Leu Ala Gly Ala Ala Val Leu Gly Ala
            180                 185                 190
Ala Pro Gly Leu Trp Leu Pro His Pro His Arg Gln Leu His Arg Gln
        195                 200                 205
Pro Gly Phe Ala Ala Glu Asp Ala Leu Gln Gln Gln Phe Ile Pro Asn
```

```
    210                 215                 220
Asp Ile Pro Ala Met His Asp Leu Glu Ser Asp Glu Leu Arg Ser His
225                 230                 235                 240
Leu Lys Gly Pro Gln His Arg Val Arg Glu Arg Pro His Asn Ala His
                245                 250                 255
Pro Leu Arg Ser Pro Ile Gln Asn Thr His Ala Arg Cys Leu Gln Arg
            260                 265                 270
His Ser Gly Cys Ala Thr Cys Ala Trp Ser Ser Pro Asp Ser Cys Thr
        275                 280                 285
Val Ala Pro Glu Thr Ser Glu Asn Ala Pro Trp Cys Val Leu Pro Gly
    290                 295                 300
Leu Gln Gly Val Phe Ala Val Pro Leu Thr Gly Ala Gln Gln Glu Ala
305                 310                 315                 320
His Trp Asp Ala Thr Pro Val Arg Leu Gln Gly Pro Trp Thr Arg Ala
                325                 330                 335
Ser Pro Phe Gly Thr Ser Pro Arg Asp Thr Lys Gly Asp Ile Gln Val
            340                 345                 350
Arg Asn His Ser Ser Val Arg Leu Val Ser Glu Gly Ser Pro Gly Pro
        355                 360                 365
Thr Thr Gly Pro Thr Pro Gly Pro Thr Arg Val Gly Ser Pro Ser Ala
    370                 375                 380
Ala Gly Gly Gln Ala Ala Arg Glu Gly Ser Pro Ser Gln Thr Asn Ser
385                 390                 395                 400
Val Ile Thr Thr Cys Ile Ser Glu Thr Leu Asn Ser Ser Trp Arg Phe
                405                 410                 415
Glu
```

<210> 408
<211> 429
<212> PRT
<213> Homo sapiens

<400> 408

```
Met Gly Ser Asp Val Arg Asp Leu Asn Ala Leu Leu Pro Ala Val Pro
 1               5                  10                  15
Ser Leu Gly Gly Gly Gly Gly Cys Ala Leu Pro Val Ser Gly Ala Ala
            20                  25                  30
Gln Trp Ala Pro Val Leu Asp Phe Ala Pro Pro Gly Ala Ser Ala Tyr
        35                  40                  45
Gly Ser Leu Gly Gly Pro Ala Pro Pro Pro Ala Pro Pro Pro Pro Pro
    50                  55                  60
Pro Pro Pro Pro His Ser Phe Ile Lys Gln Glu Pro Ser Trp Gly Gly
65                  70                  75                  80
Ala Glu Pro His Glu Glu Gln Cys Leu Ser Ala Phe Thr Val His Phe
                85                  90                  95
Ser Gly Gln Phe Thr Gly Thr Ala Gly Ala Cys Arg Tyr Gly Pro Phe
            100                 105                 110
Gly Pro Pro Pro Pro Ser Gln Ala Ser Ser Gly Gln Ala Arg Met Phe
        115                 120                 125
Pro Asn Ala Pro Tyr Leu Pro Ser Cys Leu Glu Ser Gln Pro Ala Ile
    130                 135                 140
Arg Asn Gln Gly Tyr Ser Thr Val Thr Phe Asp Gly Thr Pro Ser Tyr
```

```
145                 150                 155                 160
Gly His Thr Pro Ser His His Ala Ala Gln Phe Pro Asn His Ser Phe
                165                 170                 175
Lys His Glu Asp Pro Met Gly Gln Gln Gly Ser Leu Gly Glu Gln Gln
            180                 185                 190
Tyr Ser Val Pro Pro Pro Val Tyr Gly Cys His Thr Pro Thr Asp Ser
        195                 200                 205
Cys Thr Gly Ser Gln Ala Leu Leu Leu Arg Thr Pro Tyr Ser Ser Asp
    210                 215                 220
Asn Leu Tyr Gln Met Thr Ser Gln Leu Glu Cys Met Thr Trp Asn Gln
225                 230                 235                 240
Met Asn Leu Gly Ala Thr Leu Lys Gly His Ser Thr Gly Tyr Glu Ser
                245                 250                 255
Asp Asn His Thr Thr Pro Ile Leu Cys Gly Ala Gln Tyr Arg Ile His
            260                 265                 270
Thr His Gly Val Phe Arg Gly Ile Gln Asp Val Arg Arg Val Pro Gly
        275                 280                 285
Val Ala Pro Thr Leu Val Arg Ser Ala Ser Glu Thr Ser Glu Lys Arg
    290                 295                 300
Pro Phe Met Cys Ala Tyr Pro Gly Cys Asn Lys Arg Tyr Phe Lys Leu
305                 310                 315                 320
Ser His Leu Gln Met His Ser Arg Lys His Thr Gly Glu Lys Pro Tyr
                325                 330                 335
Gln Cys Asp Phe Lys Asp Cys Glu Arg Arg Phe Phe Arg Ser Asp Gln
            340                 345                 350
Leu Lys Arg His Gln Arg Arg His Thr Gly Val Lys Pro Phe Gln Cys
        355                 360                 365
Lys Thr Cys Gln Arg Lys Phe Ser Arg Ser Asp His Leu Lys Thr His
    370                 375                 380
Thr Arg Thr His Thr Gly Glu Lys Pro Phe Ser Cys Arg Trp Pro Ser
385                 390                 395                 400
Cys Gln Lys Lys Phe Ala Arg Ser Asp Glu Leu Val Arg His His Asn
                405                 410                 415
Met His Gln Arg Asn Met Thr Lys Leu Gln Leu Ala Leu
            420                 425


<210> 409
<211> 495
<212> PRT
<213> Homo sapiens

<400> 409
Met Ala Ala Pro Gly Ala Arg Arg Ser Leu Leu Leu Leu Leu Leu Ala
 1               5                  10                  15
Gly Leu Ala His Gly Ala Ser Ala Leu Phe Glu Asp Leu Met Gly Ser
            20                  25                  30
Asp Val Arg Asp Leu Asn Ala Leu Leu Pro Ala Val Pro Ser Leu Gly
        35                  40                  45
Gly Gly Gly Gly Cys Ala Leu Pro Val Ser Gly Ala Ala Gln Trp Ala
    50                  55                  60
Pro Val Leu Asp Phe Ala Pro Pro Gly Ala Ser Ala Tyr Gly Ser Leu
65                  70                  75                  80
Gly Gly Pro Ala Pro Pro Pro Ala Pro Pro Pro Pro Pro Pro His
```

```
                85                  90                  95
Ser Phe Ile Lys Gln Glu Pro Ser Trp Gly Gly Ala Glu Pro His Glu
            100                 105                 110
Glu Gln Cys Leu Ser Ala Phe Thr Val His Phe Ser Gly Gln Phe Thr
        115                 120                 125
Gly Thr Ala Gly Ala Cys Arg Tyr Gly Pro Phe Gly Pro Pro Pro Pro
    130                 135                 140
Ser Gln Ala Ser Ser Gly Gln Ala Arg Met Phe Pro Asn Ala Pro Tyr
145                 150                 155                 160
Leu Pro Ser Cys Leu Glu Ser Gln Pro Ala Ile Arg Asn Gln Gly Tyr
                165                 170                 175
Ser Thr Val Thr Phe Asp Gly Thr Pro Ser Tyr Gly His Thr Pro Ser
            180                 185                 190
His His Ala Ala Gln Phe Pro Asn His Ser Phe Lys His Glu Asp Pro
        195                 200                 205
Met Gly Gln Gln Gly Ser Leu Gly Glu Gln Gln Tyr Ser Val Pro Pro
    210                 215                 220
Pro Val Tyr Gly Cys His Thr Pro Thr Asp Ser Cys Thr Gly Ser Gln
225                 230                 235                 240
Ala Leu Leu Leu Arg Thr Pro Tyr Ser Ser Asp Asn Leu Tyr Gln Met
                245                 250                 255
Thr Ser Gln Leu Glu Cys Met Thr Trp Asn Gln Met Asn Leu Gly Ala
            260                 265                 270
Thr Leu Lys Gly His Ser Thr Gly Tyr Glu Ser Asp Asn His Thr Thr
        275                 280                 285
Pro Ile Leu Cys Gly Ala Gln Tyr Arg Ile His Thr His Gly Val Phe
    290                 295                 300
Arg Gly Ile Gln Asp Val Arg Arg Val Pro Gly Val Ala Pro Thr Leu
305                 310                 315                 320
Val Arg Ser Ala Ser Glu Thr Ser Glu Lys Arg Pro Phe Met Cys Ala
                325                 330                 335
Tyr Pro Gly Cys Asn Lys Arg Tyr Phe Lys Leu Ser His Leu Gln Met
            340                 345                 350
His Ser Arg Lys His Thr Gly Glu Lys Pro Tyr Gln Cys Asp Phe Lys
        355                 360                 365
Asp Cys Glu Arg Arg Phe Phe Arg Ser Asp Gln Leu Lys Arg His Gln
    370                 375                 380
Arg Arg His Thr Gly Val Lys Pro Phe Gln Cys Lys Thr Cys Gln Arg
385                 390                 395                 400
Lys Phe Ser Arg Ser Asp His Leu Lys Thr His Thr Arg Thr His Thr
                405                 410                 415
Gly Glu Lys Pro Phe Ser Cys Arg Trp Pro Ser Cys Gln Lys Lys Phe
            420                 425                 430
Ala Arg Ser Asp Glu Leu Val Arg His His Asn Met His Gln Arg Asn
        435                 440                 445
Met Thr Lys Leu Gln Leu Ala Leu Leu Asn Asn Met Leu Ile Pro Ile
    450                 455                 460
Ala Val Gly Gly Ala Leu Ala Gly Leu Val Leu Ile Val Leu Ile Ala
465                 470                 475                 480
Tyr Leu Ile Gly Arg Lys Arg Ser His Ala Gly Tyr Gln Thr Ile
                485                 490                 495
```

<210> 410

<211> 504
<212> PRT
<213> Homo sapiens

<400> 410
Met Gln Ile Phe Val Lys Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu
 1   5   10   15
Val Glu Pro Ser Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp
            20   25   30
Lys Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile Phe Ala Gly Lys
        35   40   45
Gln Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr Asn Ile Gln Lys Glu
    50   55   60
Ser Thr Leu His Leu Val Leu Arg Leu Arg Gly Ala Met Gly Ser Asp
65   70   75   80
Val Arg Asp Leu Asn Ala Leu Leu Pro Ala Val Pro Ser Leu Gly Gly
                85   90   95
Gly Gly Gly Cys Ala Leu Pro Val Ser Gly Ala Ala Gln Trp Ala Pro
            100   105   110
Val Leu Asp Phe Ala Pro Pro Gly Ala Ser Ala Tyr Gly Ser Leu Gly
        115   120   125
Gly Pro Ala Pro Pro Pro Ala Pro Pro Pro Pro Pro Pro Pro Pro His
    130   135   140
Ser Phe Ile Lys Gln Glu Pro Ser Trp Gly Gly Ala Glu Pro His Glu
145   150   155   160
Glu Gln Cys Leu Ser Ala Phe Thr Val His Phe Ser Gly Gln Phe Thr
                165   170   175
Gly Thr Ala Gly Ala Cys Arg Tyr Gly Pro Phe Gly Pro Pro Pro Pro
            180   185   190
Ser Gln Ala Ser Ser Gly Gln Ala Arg Met Phe Pro Asn Ala Pro Tyr
        195   200   205
Leu Pro Ser Cys Leu Glu Ser Gln Pro Ala Ile Arg Asn Gln Gly Tyr
    210   215   220
Ser Thr Val Thr Phe Asp Gly Thr Pro Ser Tyr Gly His Thr Pro Ser
225   230   235   240
His His Ala Ala Gln Phe Pro Asn His Ser Phe Lys His Glu Asp Pro
                245   250   255
Met Gly Gln Gln Gly Ser Leu Gly Glu Gln Gln Tyr Ser Val Pro Pro
            260   265   270
Pro Val Tyr Gly Cys His Thr Pro Thr Asp Ser Cys Thr Gly Ser Gln
        275   280   285
Ala Leu Leu Leu Arg Thr Pro Tyr Ser Ser Asp Asn Leu Tyr Gln Met
    290   295   300
Thr Ser Gln Leu Glu Cys Met Thr Trp Asn Gln Met Asn Leu Gly Ala
305   310   315   320
Thr Leu Lys Gly His Ser Thr Gly Tyr Glu Ser Asp Asn His Thr Thr
                325   330   335
Pro Ile Leu Cys Gly Ala Gln Tyr Arg Ile His Thr His Gly Val Phe
            340   345   350
Arg Gly Ile Gln Asp Val Arg Arg Val Pro Gly Val Ala Pro Thr Leu
        355   360   365
Val Arg Ser Ala Ser Glu Thr Ser Glu Lys Arg Pro Phe Met Cys Ala
    370   375   380
Tyr Pro Gly Cys Asn Lys Arg Tyr Phe Lys Leu Ser His Leu Gln Met

385 390 395 400
His Ser Arg Lys His Thr Gly Glu Lys Pro Tyr Gln Cys Asp Phe Lys
405 410 415
Asp Cys Glu Arg Arg Phe Phe Arg Ser Asp Gln Leu Lys Arg His Gln
420 425 430
Arg Arg His Thr Gly Val Lys Pro Phe Gln Cys Lys Thr Cys Gln Arg
435 440 445
Lys Phe Ser Arg Ser Asp His Leu Lys Thr His Thr Arg Thr His Thr
450 455 460
Gly Glu Lys Pro Phe Ser Cys Arg Trp Pro Ser Cys Gln Lys Lys Phe
465 470 475 480
Ala Arg Ser Asp Glu Leu Val Arg His His Asn Met His Gln Arg Asn
485 490 495
Met Thr Lys Leu Gln Leu Ala Leu
500

<210> 411
<211> 10
<212> PRT
<213> Homo sapiens

<400> 411
Val Leu Asp Phe Ala Pro Pro Gly Ala Ser
1 5 10

<210> 412
<211> 15
<212> PRT
<213> Homo sapiens

<400> 412
Gln Trp Ala Pro Val Leu Asp Phe Ala Pro Pro Gly Ala Ser Ala
1 5 10 15

<210> 413
<211> 15
<212> PRT
<213> Homo sapiens

<400> 413
Val Leu Asp Phe Ala Pro Pro Gly Ala Ser Ala Tyr Gly Ser Leu
1 5 10 15